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Five-Year Review Report

Fourth Five-Year Review Report
for
Lakewood/Ponders Corner Superfund Site
Tacoma
Pierce County, Washington

September 2007

Prepared by:

U. S. Environmental Protection Agency
Region 10
Seattle, Washington

Approved by: **Date:**

[signature], Acting Director 9/24/07

Daniel D. Opalski, Director
Office of Environmental Cleanup
U. S. EPA, Region 10

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List of Acronyms

bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cis-1,2 DCE	cis-1,2 dichloroethylene
Ecology	Washington Department of Ecology
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
FFS	Focused Feasibility Study
FS	Feasibility Study
IIA	Inter Agency Agreements
IRM	Initial Remedial Action
LTRA	Long Term Remedial Action
MCL	Maximum Contaminant Level
MTCA	Washington Model Toxics Control Act
MW	monitoring well
NCP	National Contingency Plan
NPL	National Priorities List
O & M	Operation and Maintenance
ppb	parts per billion
PERC	Tetrachloroethylene
RAOs	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
SDWA	Safe Drinking Water Act
SVES	soil vapor extraction system

TCE	Trichloroethylene
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

The Lakewood/Ponders Corner Superfund site is located south of the city of Tacoma in Pierce County, Washington. In 1981, the U. S. Environmental Protection Agency (EPA) sampled the Lakewood Water District drinking water supply wells H1 and H2. The tests indicated that wells H1 and H2 were contaminated with volatile organic compounds (VOC), i.e., tetrachloroethylene (PERC), trichloroethylene (TCE) and cis-1,2 dichloroethylene (cis-1,2 DCE). The source of contamination was identified as Plaza Cleaners, a dry cleaning and laundry facility.

The Lakewood/Ponders Corner Superfund site was listed on the National Priorities List (NPL) on December 30, 1982. The Remedial Investigation and Feasibility Studies were completed during August 1984 through July 1985. Selected remedies to address soil contamination at Plaza Cleaners include the excavation of contaminated soils, removal of contaminated sludge and off-site disposal. A Record of Decision was signed on September 30, 1985 and amended in November 14, 1986 to include the installation of a soil vapor extraction system (SVES) for treating a small portion of contaminated soil in the vadose zone. The soil remediation was completed in 1993 and EPA announced in the Federal Register the partial deletion of the Lakewood site "Soil Unit" from the NPL, effective November 27, 1996.

The selected remedy for the groundwater was a pump and treat system and institutional controls. By November 1984, two air strippers were constructed at Lakewood Water District production wells H1 and H2 and began operating to treat the contaminated groundwater. The treated groundwater meets Safe Drinking Water Act Maximum Contaminant Levels standards (after air stripping). The groundwater treatment system is still in operation, since the groundwater cleanup levels have not been achieved throughout the site.

On September 15, 1992, an Explanation of Significant Difference (ESD) was issued to establish site-specific cleanup levels for contaminants in soil and groundwater, and revise the institutional control requirements at the site. The success of the final soil remedial action eliminated the need for institutional controls (as called for in the original ROD) on land use. Since initiation of the groundwater treatment program, EPA has utilized public outreach and education to implement administrative restrictions on the installation and use of drinking water wells within the contaminated area.

EPA conducted five-year reviews in 1992 and 1997. Washington Department of Ecology (Ecology) conducted the third five-year review in 2002. This fourth five-year review, was conducted by EPA.

The remedy at the Lakewood/Ponders Corner Superfund Site currently protects human health and the environment because contaminants in soils and sludges that were sources to groundwater have been addressed through removal and off-site disposal, a pump and treat system has been implemented to treat contaminated groundwater used for drinking, and

institutional controls are in place to prevent new drinking water wells in the plume. However, in order to ensure the remedy remains protective in the long-term the following actions need to be taken to ensure long-term protectiveness:

-- evaluate the pump and treat system capture zone to ensure the system is adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame and if it is not, determine what additional actions are needed, and

-- increase the frequency of the public outreach and education program to restrict installation and use of drinking water wells, determine whether that is sufficient to ensure the remedy remains protective until cleanup goals are met, and if not, implement additional administrative restrictions (institutional controls).

Five-Year Review Summary Form, cont'd.

Issues:

1) The need for Ecology and EPA to discuss the existing monitoring wells and determine whether any of these wells can be decommissioned.
2) The need to update the institutional control plan for this site to ensure that updated information on the groundwater plume is sent frequently enough to residences, realtors, and well drillers and the controls are adequate to restrict installation and use of drinking water wells to ensure the remedy remains protective until cleanup goals are met.
3) The need for Ecology and EPA to discuss whether Tacoma Pierce County Health Department's denying of applications for private well installation should be documented as part of the remedy through an ESD.
4) Uncertainty whether the capture and treatment of contaminated groundwater by wells H1 and H2 which is making drinking water safe is also adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame.

Recommendations and Follow-up Actions:

1) Schedule and conduct discussions between Ecology and EPA to determine the appropriateness of decommissioning any of the monitoring wells.
2) Schedule and conduct discussions to develop an updated institutional control plan for this site to ensure that residences, realtors, and well drillers are updated frequently enough about the groundwater plume, clarify who has the O&M responsibility for doing so, determine whether that is sufficient to restrict installation and use of drinking water wells to ensure the remedy remains protective until cleanup goals are met, and if not, implement additional administrative restrictions (institutional controls).
3) Schedule and conduct discussions to determine whether the Health Department's denying of applications for private well installation should be documented as part of the remedy through an ESD.
4) Schedule and conduct discussions to evaluate the pump and treat system capture zone to ensure the system is adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame, and if not, will determine what additional actions are needed.

Protectiveness Statement(s):

The remedy at the Lakewood/Ponders Corner Superfund Site currently protects human health and the environment because contaminants in soils and sludges that were sources to groundwater have been addressed through removal and off-site disposal, a pump and treat system has been implemented to treat contaminated groundwater used for drinking, and institutional controls are in place to prevent new drinking water wells in the plume. However, in order to ensure the remedy remains protective in the long-term the following actions need to be taken:

-- evaluate the pump and treat system capture zone to ensure the system is adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame and if not, determine what additional actions are needed, and

-- increase the frequency of the public outreach and education program to restrict installation and use of drinking water wells, determine whether that is sufficient to ensure the remedy remains protective until cleanup goals are met., and if not, implement additional administrative restrictions.(institutional controls)

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Lakewood/Ponders Corner Superfund Site		
EPA ID *(from WasteLAN)*: WAD050075662		
Region: 10	**State: WA**	**City/County: Tacoma/Pierce**
SITE STATUS		
NPL status: : ☒Final ☒ Deleted (Soil Unit only) ☐ Other (specify)		
Remediation status (choose all that apply): ☐ Under Construction ☒ Operating (GW) under State O&M		
Multiple OUs?* ☐ YES ☒ NO	**Construction completion date: 11/30/1984**	
Has site been put into reuse? ☐ YES ☒ NO		
REVIEW STATUS		
Lead agency: : ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency		
Author name: Monica Tonel		
Author title: Project Manager	**Author affiliation: U. S. EPA**	
Review period: 02/05/2007 TO 09/24/2007		
Date(s) of site inspection: August 28, 2007		
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: : ☐1 (first) ☐ 2 (second) ☐ 3 (third) ☒ Other (fourth)		
Triggering action: ☐ Actual RA On-site Construction at OU #___ ☐ Actual RA Start at OU#___ ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date *(from WasteLAN)*: 09/24/2002		
Due date *(five years after triggering action date)*: 09/24/2007		

* ["OU" refers to operable unit.]

I. INTRODUCTION

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The U. S. Environmental Protection Agency is preparing this Five-Year Review report pursuant to CERCLA § 121(42 U.S.C. Section 9621) and the National Contingency Plan (NCP). CERCLA § 121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR § 300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

This is the fourth five-year review for the Lakewood/Ponders Corner Superfund site (site) in Tacoma, Washington. The 1986 ROD amendment triggered the first five-year review. The triggering action for this review is the previous five-year review report dated September 24, 2002. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above the levels that allow for unlimited use and unrestricted exposure. Although the selected remedy will not leave contaminants on site above unlimited use and unrestricted exposure levels when completed, this review is required by EPA policy because it will take more than five years to reach groundwater cleanup goals.

The U. S. Environmental Protection Agency (EPA) conducted this five-year review of the remedy implemented at the site. This review is required by EPA policy. This review was conducted by the EPA Project Manager for the site from February 2007 through September 2007. This report documents the results of the review.

II. SITE CHRONOLOGY

Table A: Chronology of Site Events

Event	Date
Lakewood Water District drinking water production wells (H1 and H2) were sampled by EPA and revealed contamination of volatile organic compounds (VOC) i.e., tetrachloroethylene (PERC), trichloroethylene (TCE) and cis-1,2 dichloroethylene (cis-1,2 DCE)	07/1981
Lakewood Water District wells H1 and H2 were temporarily taken out of service while monitoring wells were installed	08/1981
Source of contamination is suspected to be Plaza Cleaners located approximately 800 feet north (upgradient) of the Lakewood Water District production wells	1981
Final listing on EPA National Priorities List	12/30/1982
Stipulated agreement for remedial action reached between Ecology and Plaza Cleaners	09/1983
Cleanup of site soils, removal of drummed sludge, liquid and contaminated solids from septic tanks	1983-1987
EPA completed a focused feasibility study (FFS) identifying an Initial Remedial Action (IRM)	05/1984
Remedial Investigation conducted by EPA contractor	08/1984 - 07/1985
Two air strippers installed at Lakewood Water District production wells H1 and H2 to treat contaminated groundwater	11/1984
EPA confirmed source of soil and groundwater contamination to be effluent discharges from septic tanks behind the Plaza Cleaners building and sludge disposal on the ground surface	1985
Feasibility Study made available to public	07/1985
Record of Decision (ROD) selecting the remedy is signed	09/30/1985
Amended ROD is signed for modifications to the soils unit cleanup, i.e. installation of a soil vapor extraction system (SVES) for treatment of soils in place, reduction in the amount of septic tank contents to be removed and treated off-site, and continued soil and vapor testing until soil treatment was deemed complete	11/14/1986
Soil excavation alternative implemented	06/1992 - 07/1992
Explanation of Significant Differences (ESD) issued by EPA, primarily to (1) establish site-specific cleanup levels for contaminants in soil and groundwater; (2) eliminate the requirement to implement institutional controls on land and ground water use; and (3) document revisions to the remedial action necessary to remove the source of contamination at the site	09/15/1992

Event	Date
First five-year review report prepared by EPA	09/1992
Certification of completion for the Soils Unit Cleanup	05/06/1993
EPA announced, in the Federal Register, the partial deletion of the Lakewood site "Soil Unit" from the NPL	11/27/1996
EPA sent letter to residences, realtors, and well drillers regarding administrative control restrictions	02/24/1997
Operation & Maintenance (O & M) responsibility was transferred to the state (Ecology) as a part of the on-going long term response action	07/1997
Second five-year review report prepared by EPA	09/1997
Third five-year review report prepared by WA state Department of Ecology	09/2002
EPA sent letter to residences, realtors, and well drillers regarding administrative control restrictions. Notices were sent to trade magazines (for well drillers), and realtors.	03/2007

III. BACKGROUND

Physical Characteristics

The Lakewood/Ponders Corner site is located in Pierce County, Washington, south of the city of Tacoma on Pacific Highway Southwest. It includes the property upon which Plaza Cleaners had operated a dry cleaning business for many years. The dry cleaner no longer operates at the property. The regional aquifer was contaminated within an approximate 2,000-foot radius downgradient of Plaza Cleaners. The former Plaza Cleaners property is located at 12509 Pacific Highway Southwest in Tacoma and is bounded by Interstate 5 to the south, and surrounded on the remaining three sides by a commercial/light industrial area. Farther north of the former Plaza Cleaners, approximately one-tenth of a mile, is a predominantly residential area. Lakewood Water District has two of its production wells (H1 and H2) on a fenced area south of the former Plaza Cleaners, across Interstate 5. The production wells H1 and H2 serve approximately 150 homes. Residential property lies to the east and McChord Air Force Base to the southeast of these wells. Figure 1 shows the location of the site.

Land and Resource Use

The former location of Plaza Cleaners is currently occupied by Rainier Lighting and Electric Supply. The current land use for the surrounding area is residential and commercial. The Lakewood Water District wells (H1 and H2) are located approximately 800 feet downgradient of the Plaza Cleaners facility. It is anticipated that a mix of land

uses similar to that described will continue into the future. Soil remediation has been completed at the former Plaza Cleaners facility.

The groundwater aquifer underlying the site is currently used as a drinking water source. Treatment of groundwater continues via air stripping at the Lakewood Water District production wells (H1 and H2). Treated water discharged to the distribution system consistently meets the drinking water system discharge criteria.

History of Contamination

In July of 1981, EPA sampled drinking water wells in the Tacoma area for contamination by volatile organic compounds. The tests indicated that the Lakewood Water District's production wells H1 and H2 were contaminated with trichloroethylene (TCE), tetrachloroethylene (PERC) and cis-1, 2 dichloroethylene (cis-1, 2 DCE). The source of the contamination was determined to be Plaza Cleaners, a dry cleaning and laundry business, located approximately 800 feet north of the Lakewood Water District production wells H1 and H2.

It was confirmed that contamination had resulted from the dumping of PERC into three on-site bottomless septic tanks behind Plaza Cleaners, causing contamination of the soils. It was also confirmed that sludge was disposed of on the ground surface. In August of 1981, H1 and H2 were temporarily taken out of service while monitoring wells were installed and contaminated surficial soil in the source area was excavated.

The Lakewood/Ponders Corner Site was added to the National Priorities List (NPL) on December 30, 1982.

A stipulated agreement for remedial action was reached between Ecology and Plaza Cleaners in September of 1983. Plaza Cleaners agreed to discontinue their prior solvent disposal practices, install a system for reclaiming cleaning solvents, send stored drummed waste water and contaminated soil to a suitable off-site disposal facility, and cooperate in the immediate cleanup of the sludge disposal areas. Plaza Cleaners successfully fulfilled the terms of the agreement.

In May of 1984, EPA completed a focused feasibility study (FFS) identifying an Initial Remedial Action (IRM) needed to address those contaminant problems posing the most immediate threat at the site. The objectives of the IRM were to:

- Restrict the spread of contamination within the aquifer
- Restore normal water service to the area; and,
- Initiate groundwater treatment as quickly as possible.

By November 15, 1984, two air strippers had been installed and were operating to treat wells H1 and H2. The Puget Sound Air Pollution Control Agency issued a permit for the H1 and H2 air stripping towers treatment facility. The stack emissions from the air stripping towers at the extraction wells met all technical requirements and ambient air

quality standards for discharge.

From August 1984 to July 1985, EPA's contractor conducted a Remedial Investigation (RI) to further determine the extent of groundwater contamination at the site, test the soil at Plaza Cleaners for remaining contaminants, and determine whether other sources were contributing to the groundwater problem.

The RI indicated that PERC contamination in soils was highest where the solvent-contaminated wastes were intentionally disposed on the ground surface. Most of the PERC from the soil borings and test pit was located in the upper 12 to 13 feet of soil in the immediate vicinity of the dry cleaner's septic tanks and drain field. PERC concentrations in soil ranged from 11 parts per billion (ppb) to 3,800 ppb. Maximum TCE and cis-1,2-DCE concentrations in soil were 5 ppb and 4 ppb, respectively.

The RI also indicated that the PERC concentration in the two production wells (H1 and H2) ranged from 100 ppb to 500 ppb prior to initiating the groundwater treatment. Contaminant concentrations decreased rapidly after several days of pumping, and continued to decrease. The maximum and mean concentrations in other groundwater monitoring wells prior to treatment were: PERC at 922 ppb and 16 ppb, respectively, and TCE at 57 ppb and 3 ppb, respectively. The only detected concentration for cis-1, 2-DCE was 85 ppb in a monitoring well upgradient of the production wells. The treated groundwater currently meets MCLs (after air stripping).

IV. REMEDIAL ACTIONS

Selected Remedy

The Feasibility Study for the Lakewood site was published in July 1985, and the Record of Decision (ROD) was signed shortly thereafter on September 30, 1985.

The selected remedy in the ROD consisted of the following major elements and objectives (note Remedial Action Objectives are part of the selected remedy):

- Continued operation of the H1 and H2 production wells treatment system to clean up the aquifer. Installation of higher efficiency equipment or modification of existing equipment used in the treatment system.

- Installation of additional monitoring wells upgradient of existing production wells, and continuation of routine sampling and analysis of the aquifer to monitor progress and provide early warning of potential new contaminants.

- Excavation and removal of contaminated septic tanks and drain field piping on the Plaza Cleaners property to avoid the possible spread of contamination via uncontrolled excavation (i.e. future property development).

- Placement of administrative restrictions on the installation and use of groundwater wells and on excavation into the contaminated soils to minimize the potential for use of contaminated groundwater and reduce the risks associated with uncontrolled excavation.

Four major areas affecting the original remedial decision necessitated amending the original ROD. An Amended ROD was signed on November 14, 1986. All of the selected remedies and administrative restrictions in the September 30, 1985, ROD for the aquifer unit remained the same. Additions or modifications to the soils unit cleanup were as follows:

- Installation of a soil vapor extraction system (SVES) covering the area of soil contamination over and around the historical on-site drain field to extract PERC from the remaining contaminated soil.

- Reduction in the amount of septic tank contents to be removed and treated off-site.

- Soil and vapor testing continued until soil treatment was deemed complete.

Three issues which were not addressed in either the original ROD or the Amended ROD were included in a September 15, 1992, Explanation of Significant Differences (ESD). The issues included: (1) additional final remedial action necessary to fully remove the source of contamination at the site; (2) establishment of site-specific cleanup levels for contaminants in soil and groundwater; and, (3) elimination of the requirement to implement institutional controls on land use and of the need to place administrative restrictions to prevent groundwater use. A brief summary of these issues are presented as follows:

- Additional Final Remedial Action: Cleanup of the site soils began in 1983 when the owners of Plaza Cleaners agreed to send the drummed sludge from the on-site removal areas to an approved off-site disposal facility. This removal was conducted by a consultant hired by the owner of Plaza Cleaners.

  In 1987, EPA successfully removed contaminated solids and any water from three on-site septic tanks (which were used for disposal of dry cleaning wastes) and disposed of the contaminated material off-site. The remainder of the contaminated soil within the septic tanks and around the historical drain field was treated using a soil vapor extraction system to levels protective of human health and the environment.

  Field notes from the 1987 removal indicated that some sludge was left below one of the bottomless septic tanks when efforts were made to excavate their contents. At the time of the removal, rice hull ash was added in an attempt to solidify the sludge. However, the resulting "hot spot" contained high concentrations of PERC.

- Placement of administrative restrictions on the installation and use of groundwater wells and on excavation into the contaminated soils to minimize the potential for use of contaminated groundwater and reduce the risks associated with uncontrolled excavation.

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In July of 1992, EPA completed final remediation of this area by excavating the contaminated sludge which was transported to an approved off-site disposal facility for incineration. Contaminated soil from above and around the contaminated sludge, which was also excavated during the final remedial action but did not require incineration prior to land disposal, was transported to an approved hazardous waste facility for disposal. All contaminated waste was removed from the site by the end of September 1992.

- Site Specific Cleanup Levels:

  Soil: EPA established the cleanup level in unsaturated soil above the groundwater table at 500 ppb for PERC. The Washington Model Toxics Control Act (MTCA) Cleanup Regulation Method A levels for PERC in both residential and industrial soils is 500 ppb. This cleanup level was in compliance with state regulatory requirements, is within EPA's acceptable risk range of 10^{-4} to 10^{-6} for soil exposure pathways including dermal contact and ingestion, and is protective of the groundwater. Based on the results of confirmation samples collected subsequent to the final soil remedial action of June-July 1992, site-wide surface and subsurface soil concentrations are well below 500 ppb.

  Groundwater: PERC, TCE and cis-1, 2 DCE are the contaminants of concern in groundwater at this site. A review of federal and state regulatory levels for these contaminants in groundwater yielded the following in parts per billion (ppb):

Ground Water Standards	PERC	TCE	cis-1, 2-DCE
Federal MCL	5.0	5.0	70.0
MTCA Method-A	5.0	5.0	----

  MCL: Maximum Contaminant Level

- Institutional Controls: The Institutional Controls requirement on soil and groundwater, as called for in the ROD and Amended ROD, was addressed in the September 15, 1992 ESD as follows:

  (i) The success of the final soil remedial action eliminated the need for institutional controls (as called for in the original ROD) on land use. In 1987, EPA successfully removed contaminated solids and any water from three, on-site septic tanks (which were used for disposal of dry cleaning wastes) and disposed of the contaminated material off-site. The remainder of the contaminated soil within the septic tanks and around the historical drain field was treated using a soil vapor extraction system to levels protective of human health and the environment.

issue identified for follow-up action in section IX of this Five-Year review report. Notices to trade magazines (for drillers), and realtors will be mailed on a yearly basis.

B. GROUNDWATER - Actions

(i) System Operation and Maintenance

EPA carried out the O & M responsibilities associated with the remedial actions for the site for a 10-year period, which ended in November of 1994, ten years after construction, installation and commencement of the groundwater treatment system. In October of 1985, the Lakewood Water District assumed all the O & M costs associated with the stripping towers at wells H1 and H2. This includes inlet/outlet water sampling and analysis for the contaminants of concern, pump maintenance and inspection, general equipment observations, and maintaining data records. Ecology assumed operation and maintenance responsibilities related to groundwater monitoring in or about 1992. In July of 1997, EPA sent a letter to Ecology clarifying the operation and maintenance responsibilities that the state must provide or otherwise assure for the long term response actions at the site (Attachment 6). Ecology's O & M responsibilities for long term response action at the site include:

- Activities involving O & M of the air stripping facility and existing groundwater monitoring wells;
- Compliance monitoring of the air stripping facility;
- Decommissioning, dismantling, and disposing of the air strippers and associated equipment after restoration goals for groundwater are met; and,
- Abandonment and decommissioning of existing groundwater monitoring wells after the plume has withdrawn and certain wells are no longer needed.

To date, the routine O & M of the groundwater treatment system (air strippers) is being performed by the Lakewood Water District and the periodic groundwater monitoring is being conducted by Ecology. No significant problems regarding the routine O & M of the treatment system has been reported to Ecology by the Lakewood Water District.

In December of 2004, three test/observation wells were installed by a private party on property adjoining the former Plaza Cleaners location. Ecology requested, and has since been granted, permission to sample these wells (LPMW-1, LPMW-2, and LPMW-3, Attachment 4, Figure 1).

According to Ecology staff these wells were installed for monitoring purposes and not to serve as drinking water wells. Ecology added these wells to its groundwater monitoring program in May of 2006. In a September 11, 2007 letter from Ecology, EPA was further informed that anyone seeking permission from the Tacoma Pierce County Health Department to install a drinking water well in the vicinity of the site would be denied since the groundwater is contaminated and also because the site is in the urban growth area. Private wells are prohibited in the urban growth area. The number of existing monitoring wells and their sampling frequency are presented in Table 1.

(ii) Treatment system equipment/mechanical parts replacement

The groundwater treatment system has been in operation since November of 1984. Since October of 1985, the routine operation and maintenance of the treatment system has been conducted by the Lakewood Water District. Two Inter Agency Agreements (IAA) were developed in June 1998 and 1999 between Ecology and the Lakewood Water District providing a total of $117,607 as grants to the Lakewood Water District for replacing equipment/mechanical parts, as necessary.

On August 28, 2007, the EPA project manager (Monica Tonel) and the Ecology project manager (Guy Barrett) conducted a visit of the treatment system and Lakewood Water District production wells (H1 and H2). Also present was Don Stanley of the Lakewood Water District. An overview of the treatment train and equipment/parts maintenance work was provided by Mr. Stanley-

- oil on the re-lift pumps is changed yearly.
- maintenance of well heads is performed monthly.
- aeration balls in the air strippers were replaced 4 years ago.
- air strippers were painted on exterior last year.
- production well H2 motor and whole assembly was replaced 2 years ago.
- production well H1 was switched from turbine meter to magmeter last year (now measures gallon per minute going through the system).
- production wells H1 and H2 are routinely sampled by Ecology at each of the well heads, pre-treatment.
- treatment facility is properly secure and locked with no trespassing issues.

(iii) Monitoring well network and air stripping towers

Since 1990, twenty-seven (27) monitoring wells have been properly abandoned by Ecology. In June of 1996, EPA properly abandoned twelve

(12) monitoring wells (Table 1, Figure 2). Currently, Ecology is conducting the periodic monitoring of fourteen (14) groundwater monitoring wells, and two production wells (H1 and H2). Figure 3 and Table 1 present the well locations and their sampling frequency respectively. Sample results are provided to EPA by Ecology on a regular basis. Treated water at production wells H1 and H2 consistently meets the drinking water system discharge criteria. In addition, stack emissions from the air stripping towers at the extraction wells continue to meet all technical requirements and ambient air quality standards for discharge.

C. Long Term Response Action (Groundwater Treatment)

Remediation of the groundwater is currently ongoing under a long-term response action, as cleanup goals have not yet been achieved throughout the contaminant plume. Two air strippers, operating on wells H1 and H2, are treating the main plume located near Plaza Cleaners. The most recent contaminant concentration levels for monitoring wells MW-20B, MW-16A and production wells H-1 and H-2, as compared to the concentrations found in 2002, are presented below. Table 2 presents more detailed results and Figure 2 shows a well location map. A figure depicting the current approximate plume size is presented in Figure 4.

Monitoring Well-20B	February 2002	May 2006	Sept 2006	Cleanup Level
PERC	248 ppb	216 ppb	518 ppb	5.0 ppb
TCE	200U ppb*	4.2 ppb	5.6 ppb	5.0 ppb
cis-1, 2 DCE	100U ppb*	6.6 ppb	11 ppb	70.0 ppb
Monitoring Well-16A				
PERC	47 ppb	124 ppb	29 ppb	5.0 ppb
TCE	0.8 J ppb	1.8 ppb	0.3J ppb	5.0 ppb
cis-1, 2 DCE	2.3 ppb	4.6 ppb	0.48J ppb	70.0 ppb
Wells H-1/H-2				
PERC	12 ppb	7.3 ppb	4.8 ppb	5.0 ppb
TCE	0.2 J ppb	0.22J ppb	1U ppb	5.0 ppb
cis-1, 2 DCE	0.2 J ppb	1U ppb	1U ppb	70.0 ppb

* high detection limit is due to interferences
U - The analyte was not detected at or above the reported result.
J - The analyte was positively identified. The associated numerical result is an estimate.

VI. FIVE-YEAR REVIEW PROCESS

Administrative Component

The EPA project manager (Monica Tonel) notified the Lakewood Water District and Ecology of the initiation of the five-year review in February of 2007. The Lakewood/Ponders Corner Five-Year Review was conducted by Monica Tonel.

Community Involvement

Activities involving the community in the five-year review included placement of an ad in the local newspaper (Tacoma News Tribune; March 2007) informing the public of EPA's fourth Five-Year Review of the site, and inviting public participation during the review. Community involvement activities also included sending letters to residences, realtors, and well drillers notifying/reminding them of the continued suspension of using private wells or drilling of new wells in the zone of contamination. Notices were also sent to trade magazines (for well drillers), and realtors. (Attachment 1)

Document Review

This five-year review consisted of a review of relevant documents listed in Attachment 5. Among those documents listed is Ecology's groundwater monitoring report and data.

Groundwater Monitoring

Groundwater of concern at this site can be found in two water bearing zones. The primary aquifer "A" (advance outwash deposits - semi to confined aquifer and the primary water-supply aquifer for the area) is at a depth of approximately 38.30 feet below ground surface (bgs) (MW-20A) and zone "B", Vashon till (unconfined aquifer) which is at a depth of approximately 41 feet bgs (MW-20B). The Lakewood Water District production wells H1 and H2 are screened in the advance outwash deposits (Zone "A"). The groundwater elevation data through time has shown a downward vertical gradient from zone "B" to "A". It is unknown whether this vertical direction of flow is naturally occurring or if it is being influenced from the pumping of Lakewood Water District wells H1 and H2. The horizontal groundwater flow direction based on the groundwater monitoring wells is unknown due to the influence of pumping from production wells H1 and H2. See Figure 5 for a presentation of the north-south cross section between Plaza Cleaners and production wells H1 and H2.

In July 1981, a pump test was conducted by EPA, in which the Lakewood Water District production wells H1 and H2 were shut down for a period of 72 hours to obtain static water levels in wells H1 and H2. It was reported from this test that the natural flow direction of groundwater is toward the northwest. This flow direction is towards two lakes, Gravelly Lake and Steilacoom Lake. Gravelly lake has a depth of 55 feet and Steilacoom

Lake has a depth of 120 feet from the ground surface. It appears that these lakes are the groundwater discharge point for the advance outwash sands (Zone "A").

The groundwater monitoring data shows that, monitoring wells MW-16A and MW-20B, as well as the Lakewood Water District Production wells H1/H2 continue to have PERC concentrations exceeding the federally established maximum contaminant level (MCL) of 5 ug/l. According to Ecology staff, in December of 2004, three monitoring wells (LPMW-1, LPMW-2, and LPMW-3) were installed by a private party on property adjoining the former Plaza Cleaners site. These wells were installed for monitoring purposes and not to serve as drinking water wells. Ecology requested, and has since been granted, permission from the property owner representative to sample these wells. Ecology added these wells to its groundwater monitoring program in May of 2006. In a September 11, 2007 letter from Ecology, EPA was further informed that anyone seeking permission from the Tacoma Pierce County Health Department to install a drinking water well in the vicinity of the site would be denied since the groundwater is contaminated and also because the site is in the urban growth area. Private wells are prohibited in the urban growth area.

Groundwater monitoring data for LPMW-02, sample collected in May of 2006, shows PERC at 9.9 ppb. Groundwater sample results for the other monitoring wells has been either non-detect or below cleanup levels. Monitoring well MW-20B had the highest contaminant concentrations during the September 2006 sampling event (518 ppb). Analytical results of samples collected from MW-16A during the September 2006 sampling event revealed the presence of PERC at 29 ppb. EPA established the cleanup level for groundwater at 5.0 ppb for PERC and TCE, and 70.0 ppb for cis-1,2 DCE consistent with the federal MCLs. Compliance with these cleanup goals is required throughout the contaminated groundwater plume.

Currently, detections of PERC at concentrations exceeding its MCL are limited to monitoring wells MW-20B, MW-16A, LPMW-02, and production wells H1 and H2. Groundwater is being treated at Lakewood Water District public supply wells H1 and H2 to meet the MCLs. Graphs showing PERC concentrations for wells MW-20B and MW-16A from 1985 to 2006 are presented in Figures 6 and 7, respectively.

Site Inspection

An inspection at the site was conducted on August 28, 2007, by the EPA project manager. Guy Barrett, the Ecology project manager also participated in the site visit. The purpose of the inspection was to assess the protectiveness of the remedy. EPA staff inspected the treatment system including the treatment train, production wells H1 and H2, sampling ports, air strippers, monitoring wells and the former location of the Lakewood Plaza Cleaners area.

During the site inspection Mr. Don Stanley of the Lakewood Water District provided an overview of the treatment train, equipment maintenance activities, and influent/effluent sampling ports for production wells H1 and H2. The Lakewood Water District representative stated that the treated water consistently meets drinking water MCLs before

it is put into the distribution system. In addition, the stack emissions from the air stripping towers at the extraction wells continue to meet all technical requirements and ambient air quality standards for discharge.

No significant issues were identified regarding the treatment system, the monitoring wells, or the former location of Lakewood Plaza Cleaners. The treatment system was observed to be fully operational and functioning properly. Sampling ports are clearly visible and functional. The treatment facility is secured and locked with no issues of trespassing. The physical inspection of the Lakewood Plaza Cleaners area did not indicate any change in the land use pattern, or any new development or construction that would impact the property. The former location of Plaza Cleaners is currently occupied by Rainier Lighting and Electric Supply. The land use remains the same as identified during the RI and is presented in Section III of this report. Since there is no change in the land use pattern, the exposure pathways considered under the "Public Health Evaluation" section in the Feasibility Study in assessing the site risk are still valid for both soils and groundwater (FS, July 1985, pages 1-39 through 1-59). Hence, the cleanup levels established in the ESD for the soils and groundwater are still valid.

During the August 28, 2007 site visit, a drive-by and visual inspection of the remaining monitoring wells was also conducted. This was followed up, on September 5, 2007, with additional discussion by phone interview with Pam Marti of Ecology. Based on the visual inspection conducted during the EPA site visit and follow-up interviews with Ecology staff, all wells were confirmed to be properly secured and functional.

Interviews

During the August 28, 2007 site visit conducted by EPA, Mr. Don Stanley of the Lakewood Water District was interviewed regarding the treatment system. According to Mr. Stanley there have been no issues or problems with the treatment system. The Water District continues to provide water that meets drinking water standards. There have been no unusual expenses. Other pertinent information shared by Mr. Stanley regarding equipment/parts maintenance is presented in Section V.B.(ii) on page 12 of this report. Per Mr. Stanley, the only suggestion received by the Lakewood Water District from the public is that the air stripping towers be re-painted because of its appearance from Interstate 5. According to Mr. Stanley, the exterior of both air stripping towers was painted (light blue) last year.

During the August 28 site visit and September 5, 2007 phone interview with Ecology staff (Pam Marti), it was verified that all monitoring wells are in good condition, properly secured, and accessible. Wells that are completed aboveground have at least three bollards/posts surrounding the well, serving as protective posts. Wells that are completed flush to the ground are locked with a rectangular metal plate over it. Ecology informed EPA that in May of 2006, three wells were added to its groundwater monitoring program. These wells were installed in December of 2004, by a private party on property adjoining the former Plaza Cleaners location to serve as test/observation wells. Ecology requested, and has since been granted, permission to sample these wells (LPMW-1, LPMW-2, and

LPMW-3, Attachment 4, Figure 1). According to Ecology staff these wells were installed for monitoring purposes and not to serve as drinking water wells.

VII. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

Yes, though follow-up actions are needed to ensure that it will continue to do so and meet cleanup goals in a reasonable timeframe. Air stripping was implemented to provide a clean drinking water source, and to treat and reduce the spread of contaminated groundwater. Over the long period of this remedy, the extent of the plume and contaminant levels have shown a decreasing trend over time. The on-going groundwater treatment of Lakewood Water Districts' production wells H1 and H2, via air strippers, continues to be effective and the treated water consistently meets the drinking water system discharge criteria. The monitoring well network provides sufficient data to assess the progress of achieving cleanup goals throughout the contaminated groundwater plume.

However, the data indicates that it will take longer than the projected ten years to achieve groundwater cleanup goals, and contaminant concentrations appear to have increased in MW20-B which is at the northern edge of the plume when wells H1 and H2 are at the southern end of the plume (flow direction is north). This means there is some uncertainty whether the capture and treatment of contaminated groundwater by wells H1 and H2 which is making drinking water safe is also adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame and that further evaluation is needed to ensure the remedy remains protective.

Administrative control restrictions on the installation and use of drinking water wells combined with the actions of the Tacoma Pierce County Health Department within the contaminated area have been to prevent exposure to, or ingestion of, contaminated groundwater through new wells. The amended remedy called for and EPA has utilized public outreach and education including letters to residences, realtors, and well drillers notifying/reminding them about the potential risks associated with groundwater use in the area and recommending the continued suspension of using private wells or drilling of new wells in the zone of contamination. In addition, notices have been sent to trade magazines (for drillers) and realtors. The notices were posted in those media in March of 2007. This work was done in March 2007 for the first time in 10 years and resulted in discussions between EPA and Ecology about the need to, at a minimum, to update the groundwater plume map, clarify EPA and Ecology responsibilities, and notify at least the well drillers, government and heath agencies more frequently. In addition, based on a September 11, 2007 letter from Ecology to EPA, anyone seeking permission from the Tacoma Pierce County Health Department to install a drinking water well in the vicinity of the site would be denied since the groundwater is contaminated and also because the site is in the urban growth area. Private wells are prohibited in the urban

growth area. Residents whose properties overlie the existing groundwater contaminant plume continue to obtain drinking water from the Lakewood Water District. The agencies have been relying on this institutional control to help prevent exposure although it is not part of the selected remedy.

The groundwater treatment system (air strippers) and the Lakewood Water District production wells are secured within a locked fence. There have been no reports of trespassing.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

Changes in Standards

Groundwater cleanup goals that still must be met at this time and that have been evaluated include the Safe Drinking Water Act (SDWA) (40 CFR 141.11-141.16) from which the groundwater cleanup levels were derived - [Maximum Contaminant Levels (MCLs)]. There have been no changes in these MCLs affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

There have been no changes in the exposure pathways and toxicity factors for the contaminants of concern in ground water at Lakewood. The contaminants of concern in groundwater are PERC, TCE and cis-1, 2 DCE. No change to the cleanup levels developed from them is warranted. Results of water samples collected during routine monitoring well sampling indicate that cleanup levels will not be achieved by the ten years previously projected. It is unknown when groundwater cleanup levels will be met.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD and amended ROD, as modified by the ESD, although follow-up actions are needed to ensure that it will continue to do so and meet cleanup goals in a reasonable timeframe. There have been no changes in the physical conditions of the

site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

VIII. ISSUES

An issue identified during this five year review is the need for Ecology and EPA to discuss the existing monitoring wells and determine whether any of these wells can be decommissioned. This issue does not affect current or future protectiveness.

Another issue identified during this five year review is the need to update the institutional control plan for this site to ensure that updated information on the groundwater plume is sent frequently enough to residences, realtors, and well drillers. As part of developing the plan, EPA and Ecology need to evaluate whether increasing the frequency will be adequate to meet the remedial action objective to restrict installation and use of drinking water wells to ensure the remedy remains protective until cleanup goals are met or whether additional institutional controls are needed. An updated map of the groundwater plume also needs to be generated and sent to residences, realtors and well drillers. This issue does not affect current protectiveness but does affect future protectiveness.

Ecology and EPA need to discuss whether Tacoma Pierce County Health Department's denying of applications for private well installation should be documented as part of the remedy through an ESD. This issue does not affect current protectiveness but does affect future protectiveness.

Contaminant concentrations have increased in MW20-B which is at the northern edge of the plume when wells H1 and H2 are at the southern end of the plume (flow direction is north). This means there is uncertainty whether the capture and treatment of contaminated groundwater by wells H1 and H2 which is making drinking water safe is also adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame. This issue does not affect current protectiveness but does affect future protectiveness.

Table B: **ISSUES**

ISSUE	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
The need for Ecology and EPA to discuss the existing monitoring wells and determine whether any of these wells can be decommissioned.	N	N
The need to update the institutional control plan for this site to ensure	N	Y

that updated information on the groundwater plume is sent frequently enough to residences, realtors, and well drillers. As part of developing the plan, EPA and Ecology need to evaluate whether increasing the frequency will be adequate to meet the remedial action objective to restrict installation and use of drinking water wells to ensure the remedy remains protective until cleanup goals are met or whether additional institutional controls are needed. An updated map of the groundwater plume also needs to be generated and sent to residences, realtors and well drillers		
The need for Ecology and EPA to discuss whether Tacoma Pierce County Health Department's denying of applications for private well installation should be documented as part of the remedy through an ESD.	N	Y
Uncertainty whether the capture and treatment of contaminated groundwater by wells H1 and H2 which is making drinking water safe is also adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame.	N	Y

IX. Table C: RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N) Current	Future
The need for Ecology and EPA to discuss the existing monitoring wells and determine whether any of these wells can be decommissioned.	Schedule and conduct discussions between Ecology and EPA to determine the appropriateness of decommissioning any of the monitoring wells.	Ecology	EPA	06/2008	N	N
The need to update the institutional control plan for this site to ensure that updated information on the groundwater plume is sent frequently enough to residences, realtors, and well drillers. As part of developing the plan, EPA and Ecology need to evaluate whether increasing the frequency	Schedule and conduct discussions to develop an updated institutional control plan for this site to ensure that residences, realtors, and well drillers are updated frequently enough about the groundwater plume, clarify who has the O&M responsibility for doing so, determine whether that is sufficient to	Ecology and EPA	EPA	06/2008	N	Y

will be adequate to meet the remedial action objective to restrict installation and use of drinking water wells to ensure the remedy remains protective until cleanup goals are met or whether additional institutional controls are needed.	restrict installation and use of drinking water wells to ensure the remedy remains protective until cleanup goals are met, and if not, implement additional administrative restrictions (institutional controls).					
The need for Ecology and EPA to discuss whether Tacoma Pierce County Health Department's denying of applications for private well installation should be documented as part of the remedy through an ESD.	Schedule and conduct discussions to determine whether the Health Department's denying of applications for private well installation should be documented as part of the remedy through an ESD.	Ecology and EPA	EPA	06/2008	N	Y
Uncertainty whether the capture and treatment of contaminated groundwater by wells H1 and H2 which is making drinking water safe is also adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame.	Schedule and conduct discussions to evaluate the pump and treat system capture zone to ensure the system is adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame, and if not, will determine what additional actions are needed.	Ecology and EPA	EPA	09/2008	N	Y

X. PROTECTIVENESS STATEMENT

The remedy at the Lakewood/Ponders Corner Superfund Site currently protects human health and the environment because contaminants in soils and sludges that were sources to groundwater have been addressed through removal and off-site disposal, a pump and treat system has been implemented to treat contaminated groundwater used for drinking, and institutional controls are in place to prevent new drinking water wells in the plume. However, in order to ensure the remedy remains protective in the long-term the following actions need to be taken:

-- evaluate the pump and treat system capture zone to ensure the system is adequate to achieve the cleanup goals throughout the contaminant plume in a reasonable time frame and if not, determine what additional actions are needed, and
-- increase the frequency of the public outreach and education program to restrict installation and use of drinking water wells, determine whether that is sufficient to ensure the remedy remains protective until cleanup goals are met., and if not, implement additional administrative restrictions (institutional controls).

XI. NEXT FIVE-YEAR REVIEW

The next five-year review for the Lakewood/Ponders Corner Superfund site is required by September 2012, five years from the date of this review.

ATTACHMENT 1

Public Outreach and Community Involvement Documents

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

March 15, 2007

Reply to
Attn Of: ECL-112

Re: Properties Affected by the Lakewood/Ponders Corner Superfund Site

In sending you this letter, EPA is assuming that you are the current property owner. If this is not the case, please contact Jeanne O'Dell, EPA Community Relations Coordinator at (206) 553-6919 as soon as possible so that we can contact the appropriate person. You may also reach Ms. O'Dell by calling toll free at 1-800-424-4EPA.

Dear Property Owner:

This letter concerns properties affected by contamination from the Lakewood/Ponders Corner Superfund site, which is located south of Tacoma, Washington. The U. S. Environmental Protection Agency (EPA) is sending a letter to property owners in the area as a follow-up to letters that EPA sent in 1988 and 1997. In those letters, EPA advised against the use of existing private drinking water wells or drilling new wells in the area affected by contamination from the Lakewood/Ponders Corner Superfund site. **The area of groundwater contamination is identified within the heavy lines on the enclosed map.**

If you live within the heavy outlined area on the map, EPA recommends the continued suspension of using private wells or drilling in the designated area until the cleanup of the groundwater contamination is complete. The contaminated groundwater presents no risk of exposure or adverse health effects to anyone unless existing private wells are used or new wells are installed and used within that area. EPA is not concerned about the use or drilling of private wells outside the outlined area on the enclosed map.

In addition, the local public drinking water supply is safe for drinking purposes and household use. Although the Lakewood Water District draws water from the contaminated area, this water is continuously treated by a process called air stripping. The levels of substances in the treated water are well below the levels established as safe by EPA and the Washington Department of Ecology.

We have enclosed a brief history of the Lakewood/Ponders Corner Superfund site for your information. Please feel free to direct questions about the site to EPA by contacting Monica Tonel of my staff at (206) 553-0323 or call toll free at 1-800-424-4EPA.

Additional Information

The remainder of this letter discusses the contamination and the use and drilling of private wells in more detail.

Groundwater Contamination and Safety of Residents

The chemicals of concern in the Lakewood area groundwater are dichloroethylene (cis-1,2 DCE), trichloroethylene (TCE), and tetrachloroethylene (PERC). All three chemicals are central nervous system depressants. PERC has been associated with liver damage, and TCE has been associated with irregular heartbeat. Although the likelihood of both PERC and TCE causing human cancer is currently being reviewed, there is sufficient evidence from animal studies for EPA to consider both chemicals animal carcinogens (cancer-producing agents), and therefore, suspected human carcinogens.

The existence of the contaminated groundwater within the area outlined on the enclosed map does not currently put you at risk of exposure, particularly since a significant amount of it is pumped to the Lakewood Water District production wells where it is treated before release to the public for use. In the area of concern, the groundwater ranges from forty to fifty feet below ground surface, under a semi-permeable soil layer. Contaminants will not reach the surface or enter surface water by natural processes. There is also no risk of contact with chemical vapors from the contaminated groundwater below your property.

Use and Drilling of Private Wells

You may risk exposure to contamination if you use an existing well or install and use water from a new well. While the chemicals in the treated public drinking water supply are well within safe levels, untreated water still contains concentrations of PERC, DCE, and TCE considered unsafe for public use. The untreated water is also considered unacceptable for bathing, because dermal exposure may present a health risk.

In addition, private well use or drilling could subject you to financial liability under the federal Superfund law. Use of the contaminated water would constitute a release of hazardous substances into the environment, whereby you could be liable for all costs incurred by EPA for cleaning up the releases of the hazardous substances.

In the event that you sell or otherwise transfer ownership of your property, EPA and Ecology advise you to consult a private attorney regarding your obligation to notify prospective purchasers of the groundwater contamination underlying your property and of the risks associated with well drilling and use.

Evaluating the Cleanup

When contamination remains at a Superfund site at levels that restrict exposure or use, EPA is required to evaluate the cleanup at least once every five years after it begins. In September

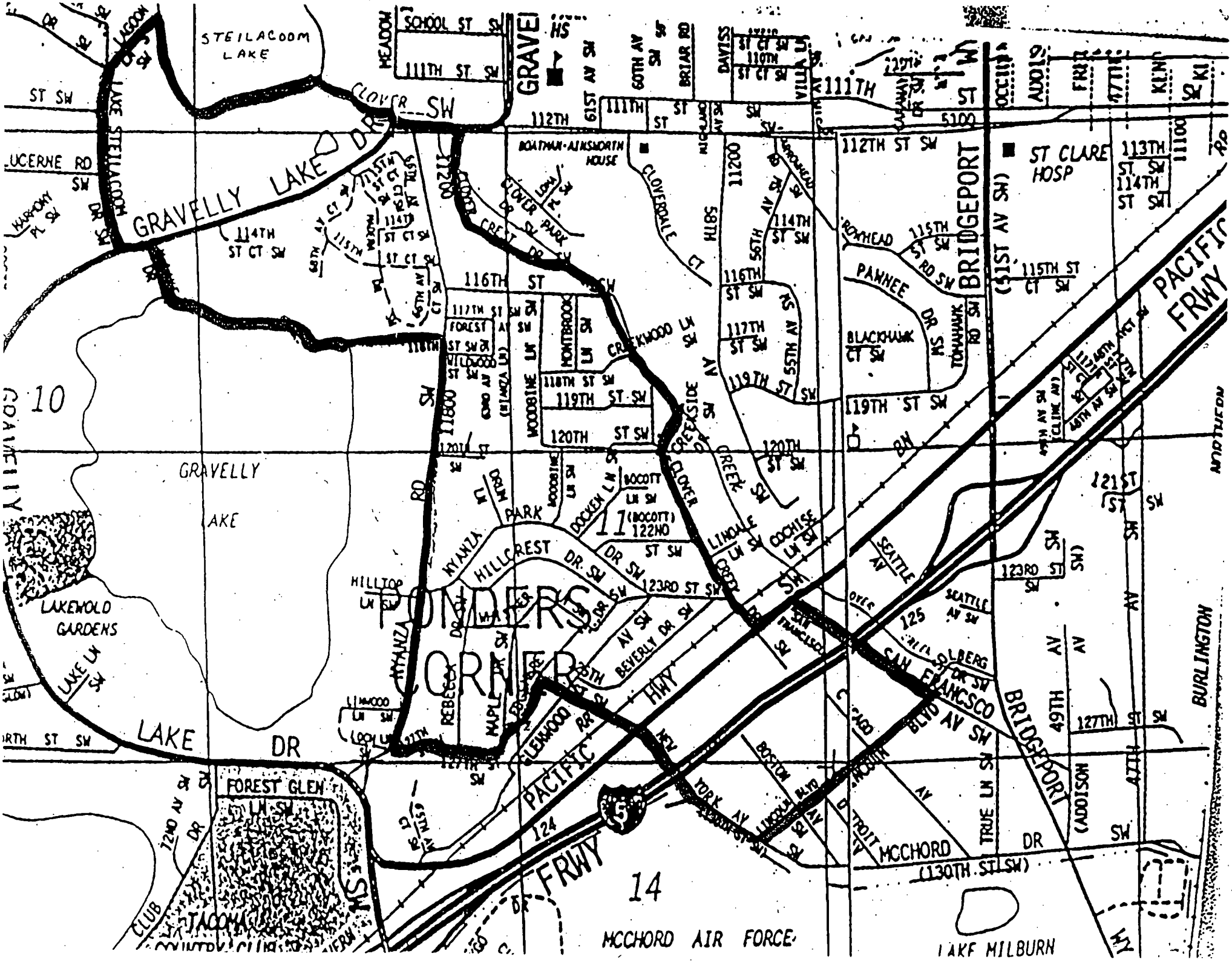
of 2002, the third "five-year review" of the Lakewood/Ponders Corner Superfund site indicated that use and drilling of private wells remains unadvisable in much of the area identified previously. In the event that EPA determines that these activities are again acceptable, residents will be notified.

If you have any questions or have new information about this site, please contact Monica Tonel of my staff at (206) 553-0323.

Sincerely,

Sylvia Kawabata, Unit Manager
Assessment and Brownfields Unit #1

Enclosures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GRAVELLY LAKE DR
GRAVELLY LAKE
LAKEWOLD GARDENS
LAKE DR
FOREST GLEN LN SW
TACOMA
CLOVER SW
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116TH ST
118TH
119TH ST SW
120TH ST SW
122ND ST SW
123RD ST SW
HILLCREST DR SW
BEVERLY DR SW
CLOVER CREEK
CLOVERDALE CT
BOATMAN-AINSWORTH HOUSE
BRIDGEPORT
ST CLARE HOSP
PACIFIC FRWY
PAWNEE DR SW
BLACKHAWK CT SW
TOMAHAWK RD SW
SEATTLE AV SW
SAN FRANCISCO BLVD SW
BRIDGEPORT (ADDISON) AV SW
MCCHORD DR SW
(130TH ST SW)
MCCHORD AIR FORCE
LAKE MILBURN
BURLINGTON
10
11
14

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

History of the Lakewood/Ponders Corners Superfund Site
Tacoma, Washington
March 2007

Background

In July 1981, the U.S. Environmental Protection Agency (EPA) sampled drinking water wells in the Tacoma area for volatile organic compounds and found trichlorethylene (TCE), tetrachloroethylene (PERC), and dichloroethylene (cis-1,2 DCE) in two Lakewood Water District production wells. The source of the contamination was determined to be Plaza Cleaners, a dry cleaning and laundry business that disposed of waste solvents on site.

In August 1981, contaminated soil was excavated and removed from the Plaza Cleaners property and the two contaminated Lakewood Water District wells were taken out of service. EPA added the Lakewood/Ponders site to the National Priorities List in 1982. Under a 1983 agreement with the Washington State Department of Ecology (Ecology), Plaza Cleaners revised their solvent-handling practices.

Groundwater Cleanup

In 1984, EPA and Ecology installed two air stripping towers to treat the water from the Lakewood Water District wells. These towers remove and treat the contamination, and the clean water is discharged for use by the public. The Lakewood Water District will continue to operate the groundwater treatment system until the groundwater cleanup goals are met.

Concentrations of volatile organic compounds in the contaminated groundwater plume are decreasing. The concentration of PERC in the most contaminated monitoring well has decreased from 4,856 parts per billion (ppb) to 120 ppb. TCE in the same monitoring well decreased from 103 to 2.3 ppb in the same time period.

Soil Cleanup

Soils on the Plaza Cleaners property were contaminated with the solvent PERC, which was used by the business in their dry cleaning process. In 1987, soils were excavated from three bottomless septic tanks. A soil vapor extraction system was installed and operated from 1988 through 1989 to remove PERC from soils within the septic tanks and the drain field on the property. In 1992, contaminated sludge remaining in and around one septic tank was removed to complete the soil cleanup.

In September 1992, EPA issued a Preliminary Close Out report for the Lakewood/Ponders Corner Superfund site to document the completion of all construction activities at the site.

Copies of the above mentioned reports are available upon request to the EPA. You may direct questions about the site to EPA by contacting Monica Tonel at (206) 553-0323, or toll free at 1-800-424-4372.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

March 15, 2007

Reply to
Attn Of: ECL-112

Re: Properties Affected by the Lakewood/Ponders Corner Superfund Site

Dear Realtor:

This letter concerns properties affected by contamination from the Lakewood/Ponders Corner Superfund site, which is located south of Tacoma. The U.S. Environmental Protection Agency (EPA) is sending a letter to property owners in the area as a follow-up to letters that EPA sent in 1988 and 1997. A map, enclosed with the letter sent to property owners identifies the area of groundwater contamination. A copy of the map is attached to this notice.

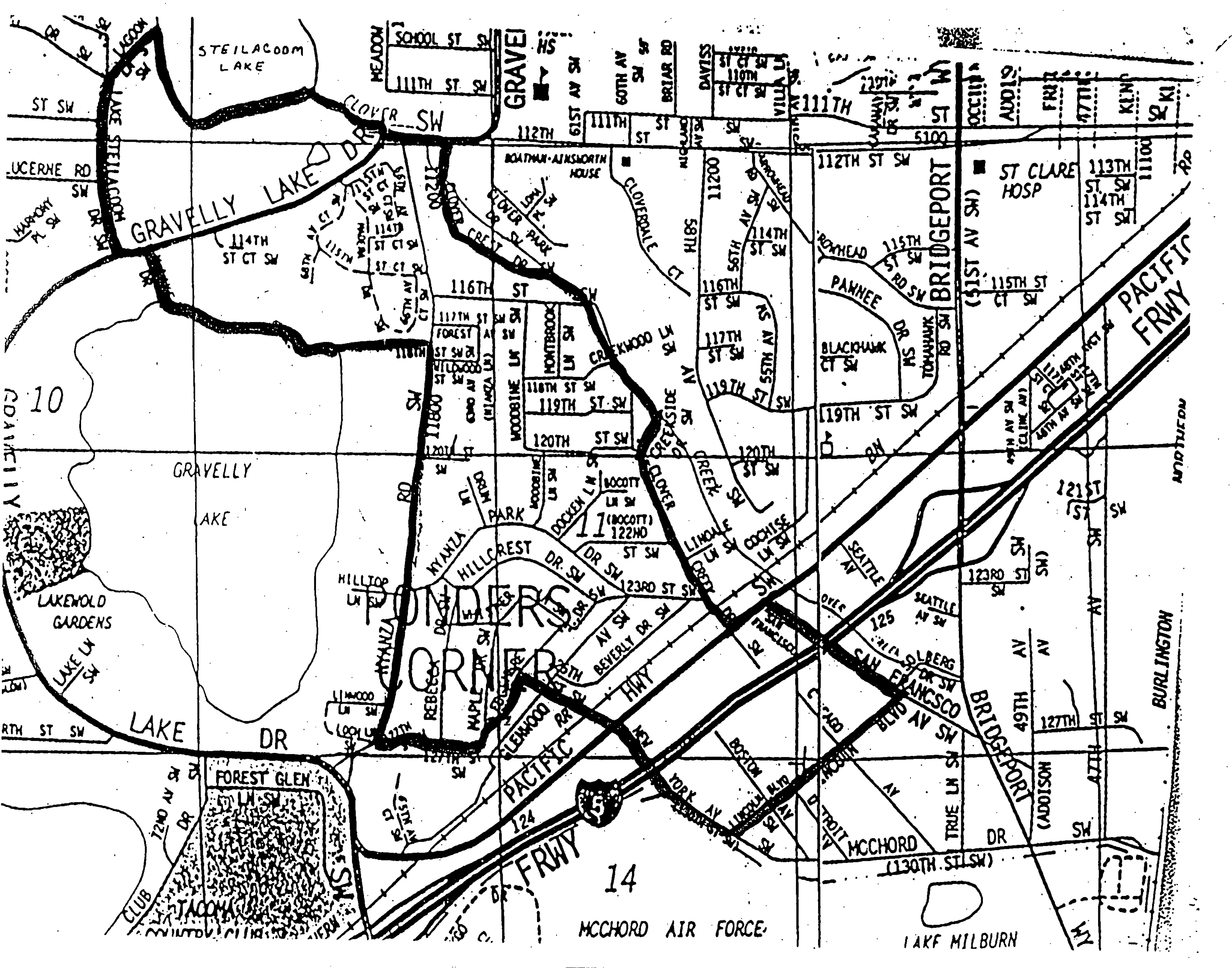
EPA recommends that owners of property within the heavy outlined area on the map continue suspension of using private wells or drilling in that area until the groundwater cleanup goals are met. The contaminated groundwater presents no risk of exposure or adverse health effects to anyone unless private wells are used or drilled in that area. EPA is not concerned about the use or drilling of private wells outside the outlined area on the enclosed map.

Also enclosed with each letter sent to property owners in the area is a brief history of the Lakewood/Ponders Corner Superfund site. That information is also being provided with this notice. If you have questions about the site, please contact Superfund Project Manager Monica Tonel at (206) 553-0323, or Jeanne O'Dell, Community Relations Coordinator at (206) 553-6919, or either of them toll free at 1-800-424-4EPA.

Sincerely,

Sylvia Kawabata, Unit Manager
Assessment and Brownfields Unit #1

Enclosures


STEILACOOM LAKE
GRAVELLY LAKE DR
GRAVELLY LAKE
PONDERS CORNER
LAKEWOLD GARDENS
LAKE DR
FOREST GLEN LN SW
TACOMA COUNTRY CLUB
PACIFIC HWY
PACIFIC FRWY
MCCHORD AIR FORCE
LAKE MILBURN
BRIDGEPORT
ST CLARE HOSP
BOATMAN-AINSWORTH HOUSE
CLOVERCREST DR SW
CREEKSIDE DR
SAN FRANCISCO AV SW
MCCHORD DR SW
(130TH ST SW)
HILLCREST DR SW
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History of the Lakewood/Ponders Corners Superfund Site
Tacoma, Washington
March 2007

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In August 1981, contaminated soil was excavated and removed from the Plaza Cleaners property and the two contaminated Lakewood Water District wells were taken out of service. EPA added the Lakewood/Ponders site to the National Priorities List in 1982. Under a 1983 agreement with the Washington State Department of Ecology (Ecology), Plaza Cleaners revised their solvent-handling practices.

Groundwater Cleanup

In 1984, EPA and Ecology installed two air stripping towers to treat the water from the Lakewood Water District wells. These towers remove and treat the contamination, and the clean water is discharged for use by the public. The Lakewood Water District will continue to operate the groundwater treatment system until the groundwater cleanup goals are met.

Concentrations of volatile organic compounds in the contaminated groundwater plume are decreasing. The concentration of PERC in the most contaminated monitoring well has decreased from 4,856 parts per billion (ppb) to 120 ppb. TCE in the same monitoring well decreased from 103 to 2.3 ppb in the same time period.

Soil Cleanup

Soils on the Plaza Cleaners property were contaminated with the solvent PERC, which was used by the business in their dry cleaning process. In 1987, soils were excavated from three bottomless septic tanks. A soil vapor extraction system was installed and operated from 1988 through 1989 to remove PERC from soils within the septic tanks and the drain field on the property. In 1992, contaminated sludge remaining in and around one septic tank was removed to complete the soil cleanup.

In September 1992, EPA issued a Preliminary Close Out report for the Lakewood/Ponders Corner Superfund site to document the completion of all construction activities at the site.

Copies of the above mentioned reports are available upon request to the EPA. You may direct questions about the site to EPA by contacting Monica Tonel at (206) 553-0323, or toll free at 1-800-424-4372.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

March 15, 2007

Reply To
Attn Of: ECL-112

Re: Drilling in the Area Affected by the Lakewood/Ponders Corner Superfund Site

Dear Drilling Contractor:

This is a follow-up to letters that the U.S. Environmental Protection Agency (EPA) sent to drilling contractors in the Tacoma area in 1988 and 1997. In those letters, EPA informed drillers of contamination in an aquifer located in Pierce County and advised drillers of possible health and financial risks associated with drilling into the aquifer. The contamination is part of the Lakewood/Ponders Corner Superfund site, which is located south of Tacoma.

EPA has eliminated the source of the contamination, and the contaminated groundwater plume has decreased significantly in size. However, EPA recommends that the suspension of drilling in the area identified within the heavy lines on the map continue until the groundwater cleanup goals are met. EPA is also advising owners of properties that overlie the contaminated groundwater that they should not use or drill private drinking water wells during this period of time.

The remainder of this letter discusses drilling in more detail.

Drilling Risks and Future Drilling

Drilling into a contaminated portion of the aquifer could expose drillers to contaminated water. The chemicals of concern are dichloroethylene (cis-1,2 DCE), trichloroethylene (TCE), and tetrachloroethylene (PERC). All three chemicals are central nervous system depressants. PERC has been associated with liver damage, and TCE has been associated with irregular heartbeat. Although the likelihood of both PERC and TCE causing human cancer is currently being reviewed, there is sufficient evidence from animal studies for EPA to consider both chemicals animal carcinogens (cancer-producing agents), and therefore, suspected human carcinogens.

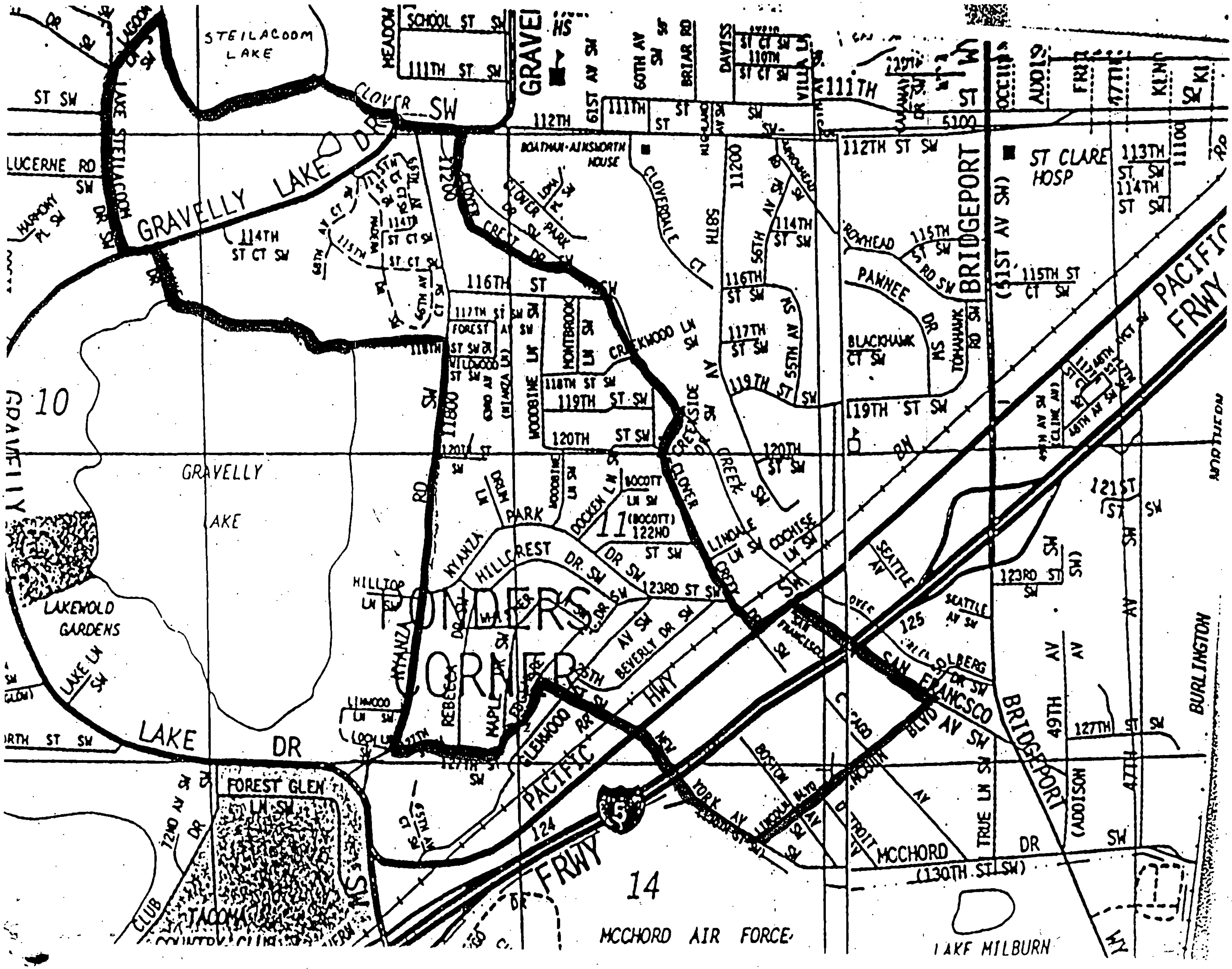
In addition, drilling could subject drilling contractors to financial liability under the federal Superfund law. Because the process of drilling through surface and subsurface soils and drawing up contaminated water would constitute a release of hazardous substances into the environment, drillers could be liable for all costs incurred by EPA for cleaning up the releases of the hazardous substances.

EPA anticipates that well drilling and private well use may be allowed in the future in the Lakewood area presently still affected by the Lakewood/Ponders Corner Superfund site. Contaminant levels in the groundwater, which is treated by the air stripping process, have decreased considerably.

You may direct questions about the site to EPA by contacting Superfund Project Manager Monica Tonel at (206) 553-0323, or toll free at 1-800- 424-4372.

Sincerely,

Sylvia Kawabata, Unit Manager
Assessment and Brownfields Unit #1



STEILACOOM LAKE
SCHOOL ST SW
111TH ST SW
CLOVER SW
112TH
GRAVELLY LAKE DR
LAKE STEILACOOM DR SW
LUCERNE RD SW
HARMONY PL SW
114TH ST CT SW
BOATMAN-AINSWORTH HOUSE
CLOVER CREST DR SW
CLOVER PARK
CLOVERDALE CT
112TH ST SW
BRIDGEPORT
ST CLARE HOSP
113TH ST SW
114TH ST SW
ROWHEAD
115TH ST RD SW
PAWNEE DR SW
115TH ST CT SW
116TH ST
117TH ST SW
FOREST AV SW
MONTBROOK LN
CREEKWOOD LN SW
BLACKHAWK CT SW
TOMAHAWK RD SW
PACIFIC FRWY
10
118TH ST SW
119TH ST SW
120TH ST SW
WOODBINE LN
CREEKSIDE AV SW
GRAVELLY LAKE
LAKEWOLD GARDENS
LAKE LN SW
HILLTOP LN
NYANZA RD
HILLCREST DR SW
PARK
DOCKEN LN SW
BOCOTT LN SW
11
122ND ST SW
123RD ST SW
121ST ST SW
LINDALE LN SW
COCHISE LN SW
SEATTLE AV
125
SEATTLE AV SW
SOLBERG DR SW
PONDERS CORNER
REBECCA
MAPLE
GLENWOOD
BEVERLY DR SW
SAN FRANCISCO AV SW
BRIDGEPORT
49TH AV SW
127TH ST SW
BURLINGTON
LINWOOD LN SW
LAKE DR
FOREST GLEN LN SW
72ND AV DR
PACIFIC FRWY
124
5
YORK AV
BOSTON AV
CHICAGO AV
DETROIT AV
TRUE LN SW
MCCHORD DR SW
(130TH ST SW)
(ADDISON)
14
MCCHORD AIR FORCE
LAKE MILBURN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

Notice to Well Drillers:
Lakewood/Ponders Corner Superfund Site
March 2007

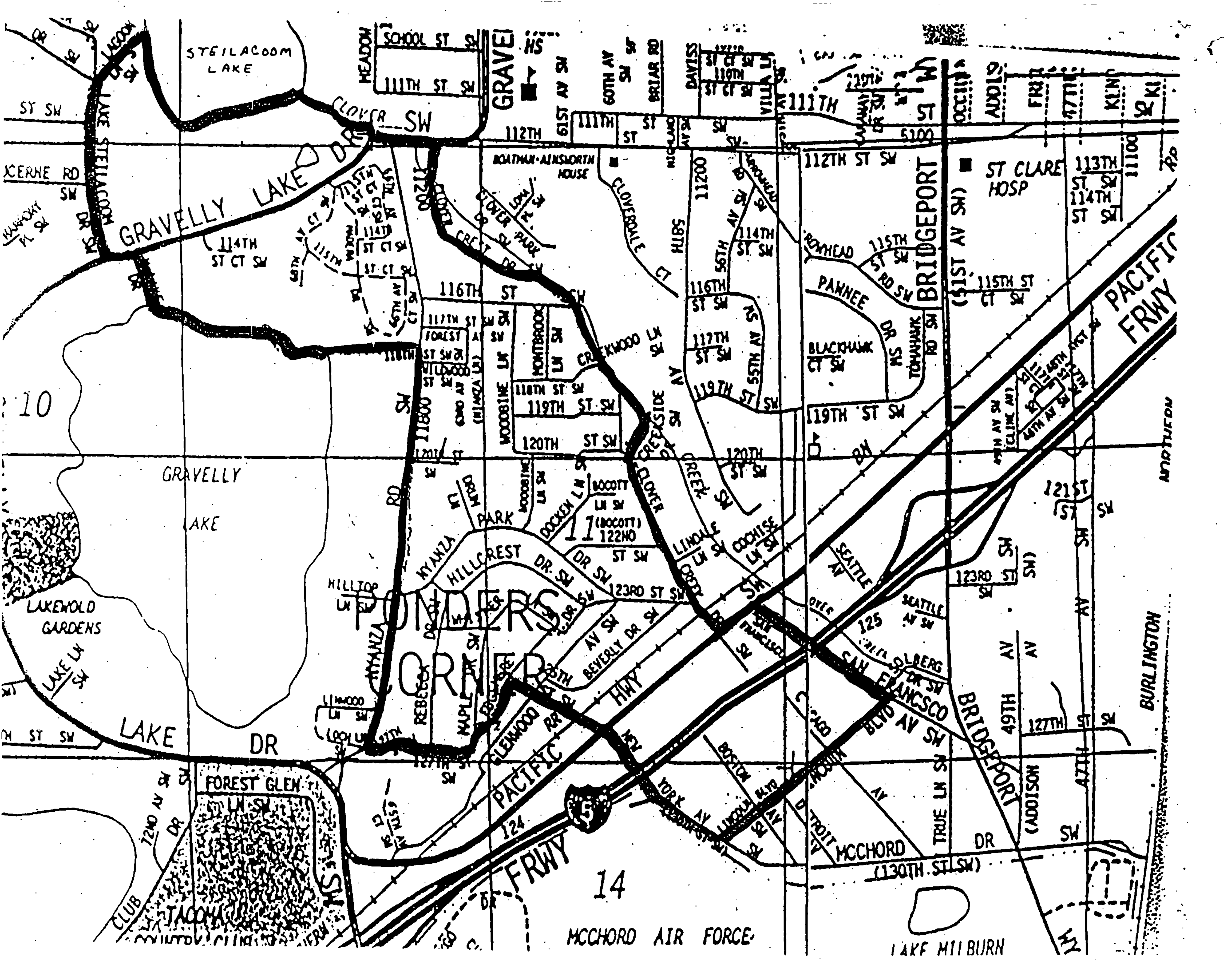
The U.S. Environmental Protection Agency (EPA) advises drilling contractors in the Tacoma area that suspension of drilling should continue in areas affected by contamination from the Lakewood/Ponders Corner Superfund site. The affected aquifer is located south of Tacoma in Pierce County.

Drilling into a contaminated portion of the aquifer could expose drillers to water contaminated with dichloroethylene (cis-1,2 DCE), trichloroethylene (TCE), and tetrachloroethylene (PERC). In addition, drilling could cause a release of hazardous substances into the environment and subject drilling contractors to financial liability under the federal Superfund law. **The area of groundwater contamination is identified within the heavy lines on the map accompanying this notice.**

EPA has eliminated the source of the contamination, and the contaminated groundwater plume has decreased significantly since drillers were notified of it in 1988. However, EPA recommends that the suspension of drilling in the areas still affected by the contamination continue until the groundwater cleanup goals are met.

In addition to this notice to well drillers, a letter from EPA will be published in the next issue of the Washington State Drilling and Ground Water Association's newsletter, along with a map of the area of groundwater contamination. If you have questions about the site, please contact EPA:

Monica Tonel, Superfund Project Manager
U.S. Environmental Protection Agency
1200 Sixth Avenue, ECL-112
Seattle, Washington 98101
(206) 553-0323 or toll free at 1-800-424-4372
tonel.monica@epa.gov


STEILACOOM LAKE
SCHOOL ST SW
111TH ST SW
HS
GRAVELLY LAKE DR
CLOVER SW
112TH
111TH ST
112TH ST SW
BOATMAN-AINSWORTH HOUSE
CLOVERDALE CT
ST CLARE HOSP
113TH ST SW
114TH ST SW
BRIDGEPORT (51ST AV SW)
LAKE STEILACOOM DR SW
114TH ST CT SW
CLOVER CREST DR SW
CLOVER PARK
116TH ST SW
115TH ST CT SW
PAWNEE DR SW
BLACKHAWK CT SW
TOMAHAWK RD SW
117TH ST SW
CREEKWOOD LN SW
CREEKSIDE AV SW
118TH ST SW
119TH ST SW
120TH ST SW
PACIFIC FRWY
GRAVELLY LAKE
11800
NYANZA RD SW
WOODBINE LN SW
DOCKEN LN SW
BOCOTT LN SW
122ND ST SW
HILLCREST DR SW
NYANZA PARK
123RD ST SW
CLOVER CREEK DR SW
LINDALE LN SW
COCHISE LN SW
SEATTLE AV SW
121ST ST SW
HILLTOP LN SW
PONDERS CORNER
LAKEWOLD GARDENS
SAN FRANCISCO AV SW
125
BEVERLY DR SW
PACIFIC HWY
REBECCA
MAPLE
GLENWOOD
127TH ST SW
LAKE DR
FOREST GLEN LN SW
NEW YORK AV
BOSTON
CHICAGO
DETROIT
LINCOLN BLVD
TRUE LN SW
BRIDGEPORT
49TH AV
47TH AV
ADDISON
BURLINGTON
MCCHORD DR SW
(130TH ST SW)
124
5
FRWY
14
10
11
TACOMA COUNTRY CLUB
MCCHORD AIR FORCE
LAKE MILBURN

he was hauled to Guantanamo Bay, the former kangaroo skinner is expected to get a chance to contest allegations that he took up arms against the United States in the chaotic aftermath of the Sept. 11 attacks.

Hicks is scheduled to be arraigned today on a charge of providing material support for terrorism. He is the first Guantanamo detainee charged under new rules for military trials, or commissions, adopted after the Supreme Court cast aside the previous system in June.

United States no longer considers Hicks to be a significant catch in its global war on terror.

Military charging documents depict Hicks – a high school dropout who converted to Islam in 1999 after returning from Kosovo, where he fought on behalf of Muslim Albanians seeking independence from Serbia – as somewhat of a hapless holy warrior.

Armed with grenades and an assault rifle, Hicks spent weeks trying to join the fight in Afghanistan following the 2001 U.S. invasion but apparently failed to win

11 attacks – Hicks remained on the margins.

In Kandahar, where he was assigned to watch a tank outside the airport, he tried unsuccessfully to share his knowledge of al-Qaida tactics, the United States alleges.

"After apparent resistance to his training, and no enemy in sight

Tacoma News Tribune March 6, 2007

EPA to Review Cleanup at Lakewood/Ponders Corner Superfund Site
We Invite Your Comments through April 30, 2007

The U.S Environmental Protection Agency (EPA) is doing the fourth Five-Year Review of the Lakewood/Ponders Corner Superfund Site located south of the city of Tacoma, Washington. The review is to make sure the remedy that is in place protects people and the environment.

EPA welcomes your participation during our review. If you have information that may help EPA with the review, contact Monica Tonel, EPA Project Manager, 206-553-0323 or 800-424-4372, ext 0323. Email: tonel.monica@epa.gov. TTY users may call the Federal Relay Service 800 877-8339 and give the operator Monica Tonel's phone number.

The Lakewood/Ponders Corner Site is listed on EPA's National Priorities List of the nation's most contaminated hazardous waste sites. Contamination includes trichloroethylene, tetrachloroethylene and cis-1,2 dichloroethylene. Cleanup has included excavation and removal of contaminated soil areas and treating groundwater. To learn more, visit www.epa.gov/r10earth/, click on *Index A-Z*, then on L, then on Lakewood Site.

ATTACHMENT 2

Figures

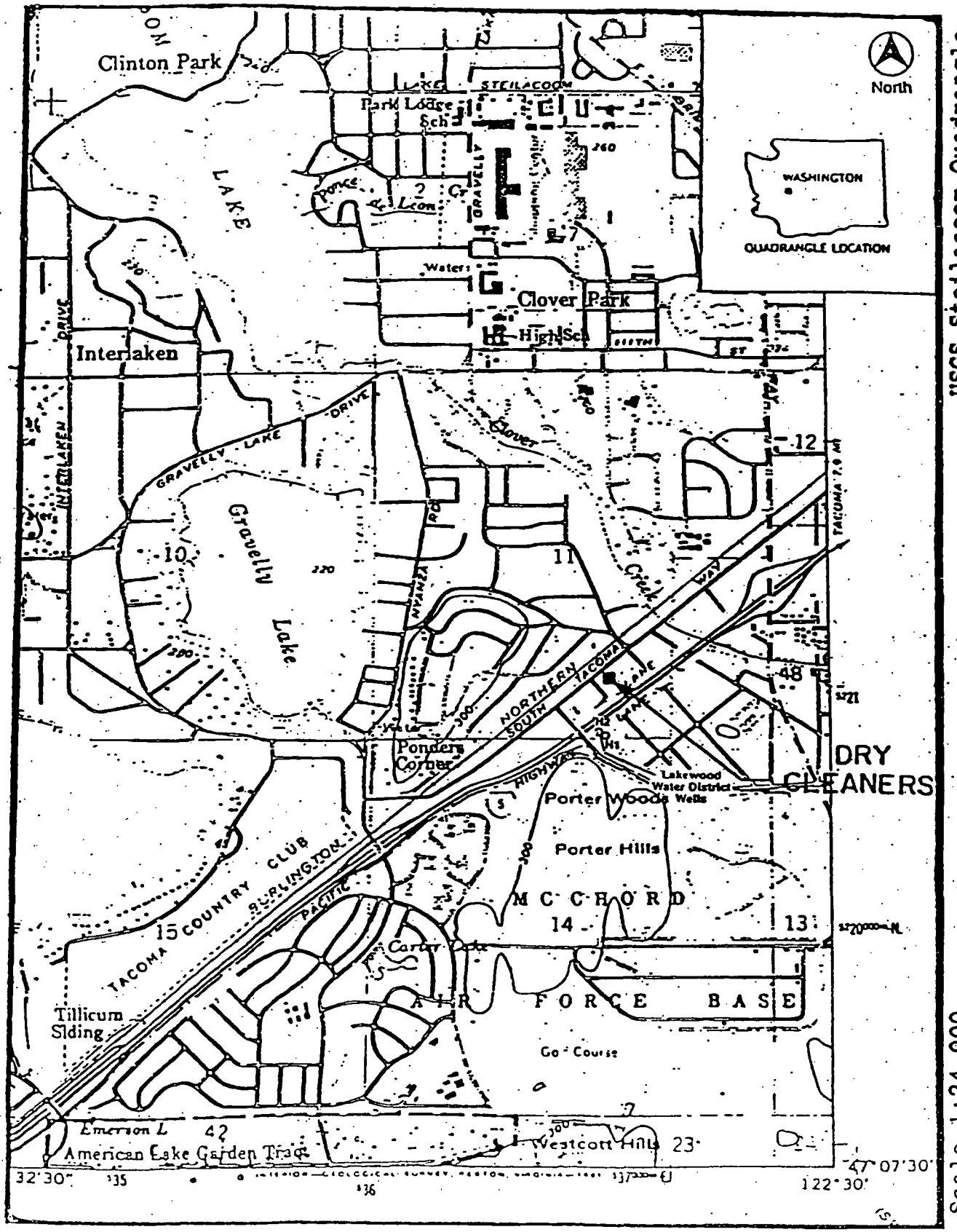


Figure 1: Site Location Map – Lakewood/Ponders Corner

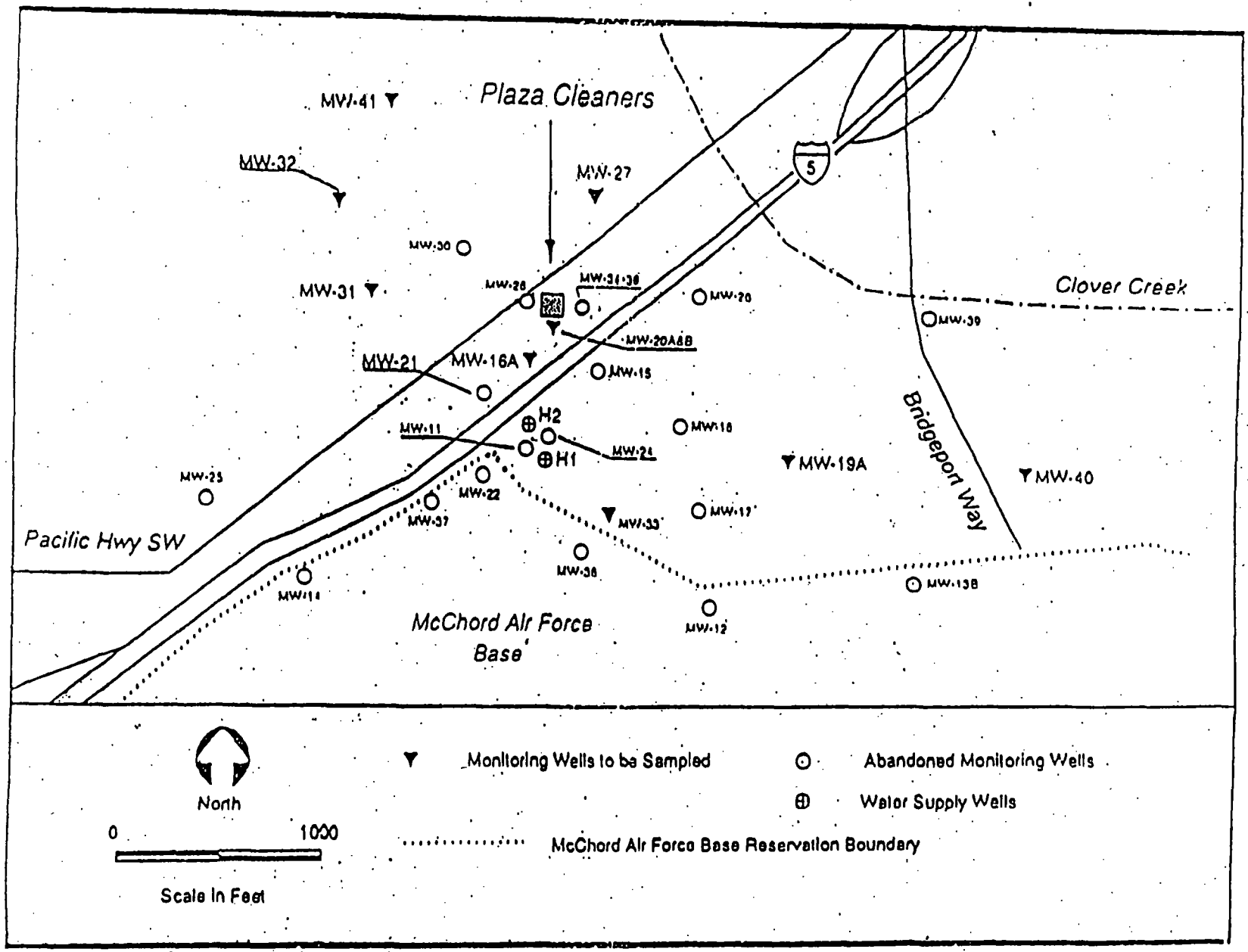


Figure 2: Monitoring Well Locations Map- Lakewood Ponders Corner

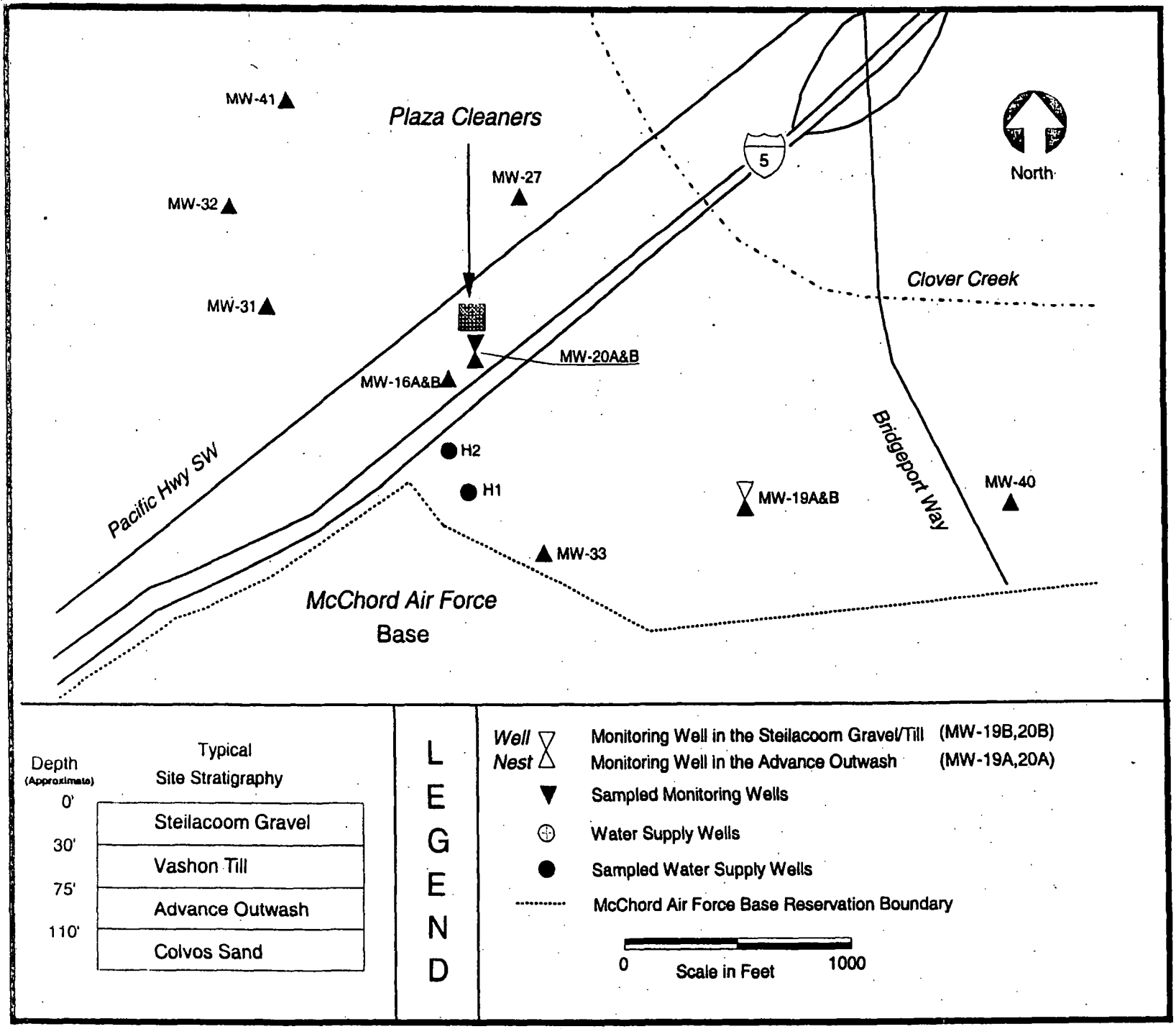


Figure 3: Currently Existing Monitoring Wells-Lakewood/Ponders Corner

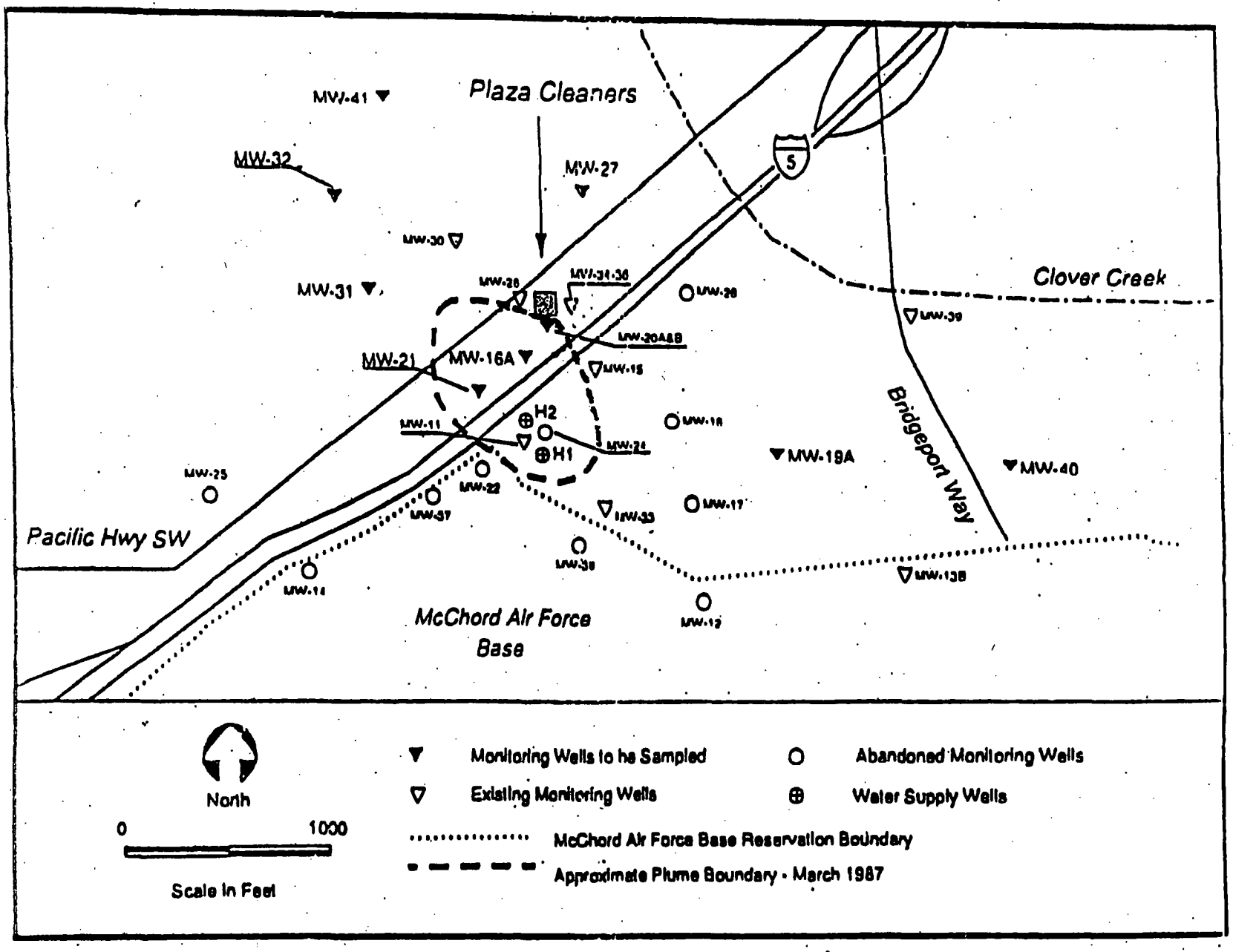


FIGURE 4: Current Groundwater Plume – Lakewood/Ponders Corner

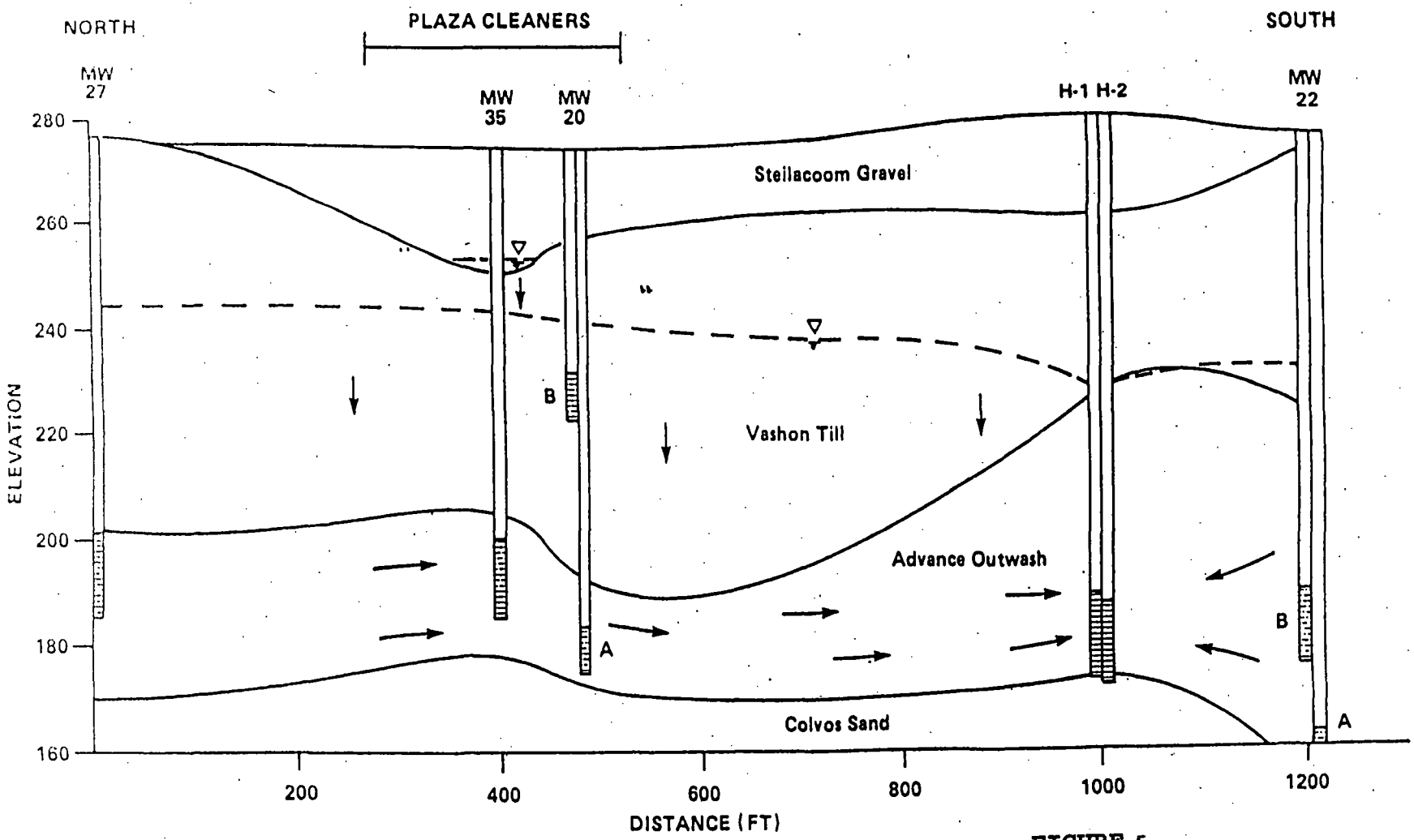


FIGURE 5

NORTH-SOUTH CROSS-SECTION BETWEEN PLAZA CLEANERS AND H1 AND H2

(adapted from CH2MHill, Ponders Corner Feasibility Study)

1985

FIGURE 6. PERC Concentrations for Well MW-20B from 1985 to 2006

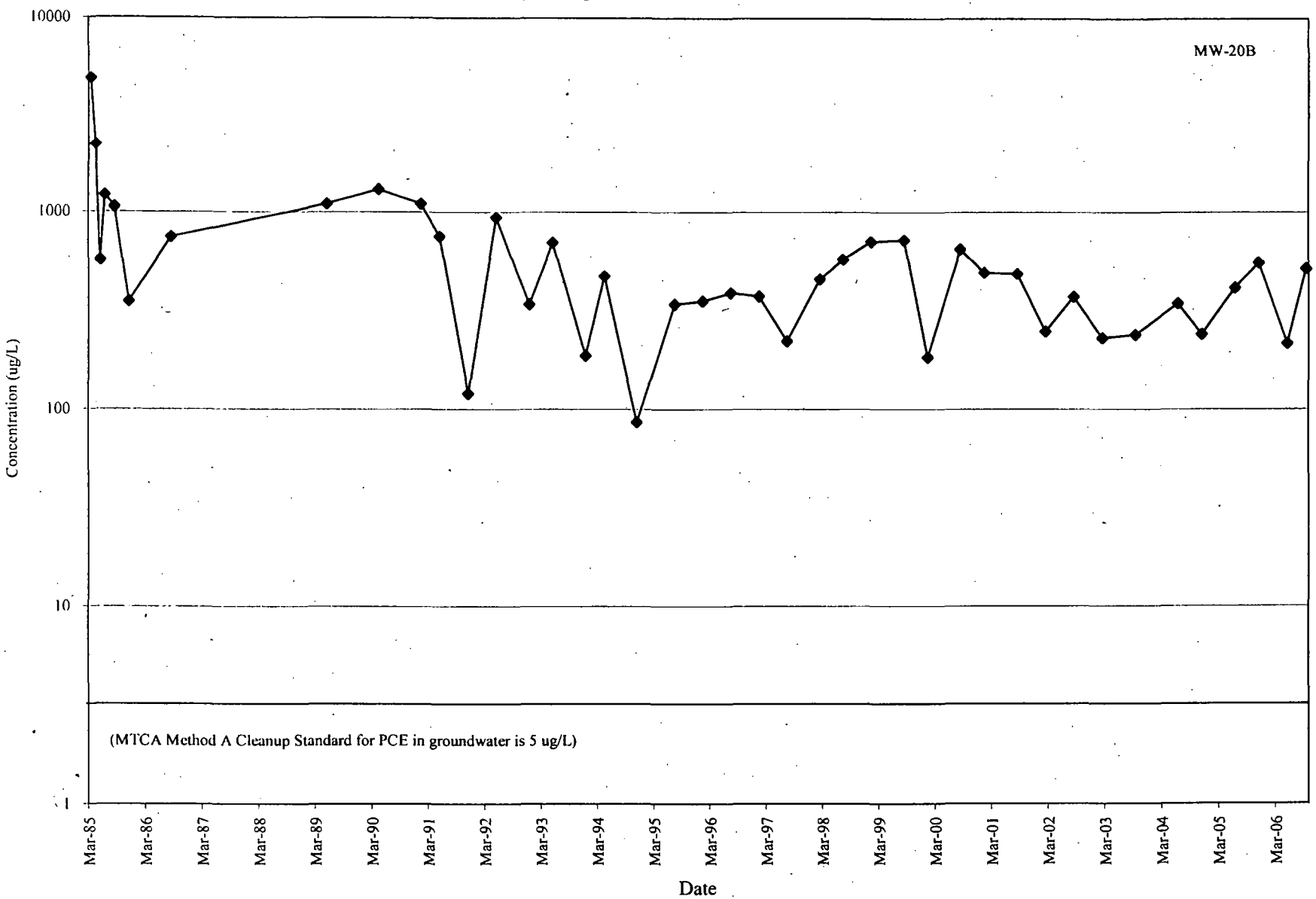
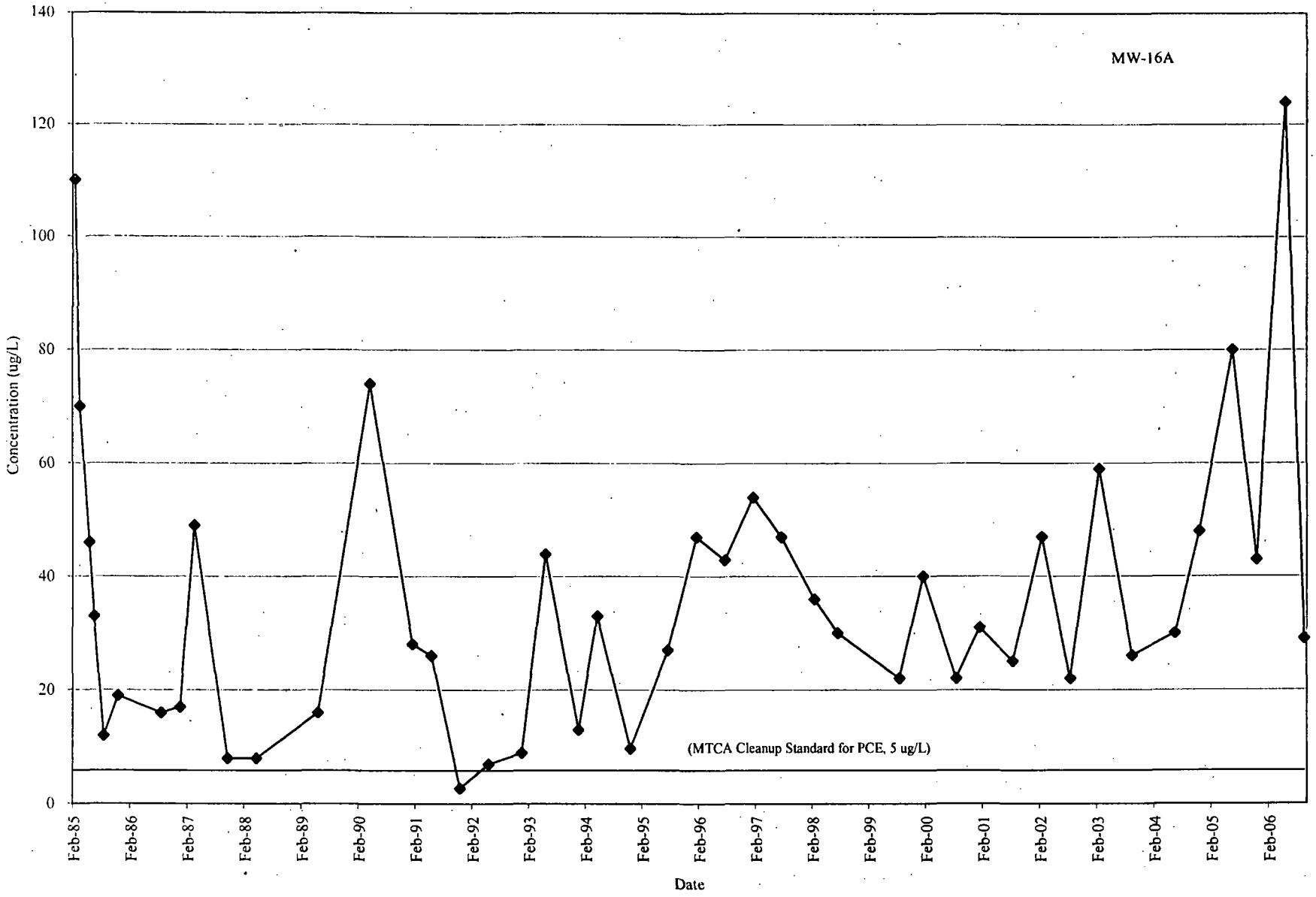


FIGURE 7. PERC Concentrations for Well MW-16A from 1985 to 2006



ATTACHMENT 3

Tables

TABLE 1

LAKEWOOD / PONDERS CORNER SUPERFUND SITE
GROUNDWATER MONITORING WELLS

Wells Decommissioned by Ecology in 1990	Wells capped & pumps removed by Ecology in 1996	Decommissioned by EPA in 1996
MW-1	MW-11A	MW-13A
MW-2	MW-11B	MW-13B
MW-3		MW-15A
MW-4		MW-15B
MW-5		MW-21
MW-6		MW-28A
MW-7		MW-28B
MW-8		MW-30
MW-9		MW-34
MW-10		MW-35
MW-12		MW-36
MW-14		MW-39A
MW-17A		MW-39B
MW-17B		
MW-18		
MW-22		
MW-23		
MW-24A		
MW-24B		
MW-25		
MW-26		
MW-29		
MW-37		
MW-38		

Remaining Wells	Sampling Frequency
MW-16A	semiannually
MW-19A	once every 2 years
MW-19B	occasionally
MW-20A	semiannually
MW-20B	semiannually
MW-27	semiannually
MW-31	once every 2 years
MW-32	once every 5 years
MW-33	annually
MW-40	once every 5 years
MW-41	once every 5 years
LPMW-1	annually (not installed by Ecology or EPA)
LPMW-2	annually (not installed by Ecology or EPA)
LPMW-3	annually (not installed by Ecology or EPA)
H1/H2 production well	one or the other semiannually, depending on which one is running

Table 2. Summary of Sample Results (ug/L) from January 1991 to September 2006

Well	January 1991			May 1991			November 1991			May 1992			December 1992		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**28**	**1 J**	**2.4 J**	**26**	**0.6 J**	**2**	**2.7 J**	1 U	**0.6 J**	**7**	1 U	**1**	**9 J**	**0.3 J**	**0.8 J**
MW-20A	1 U	1 U	1 U	**0.4 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.5 J**	1 U	1 U	**0.8 J**	1 UJ	1 UJ
MW-20B	**1100 D**	**18**	**33**	**752**	**16**	**30**	**120**	**2.6 J**	**6.7**	**940**	**13**	**32**	**340 J**	**14 J**	**20 J**
MW-21	**2.1 J**	1 U	**1 J**	**2**	1 U	**0.7 J**	**2.2 J**	1 U	**1.0 J**	**2**	1 U	**0.6 J**	**2**	**0.2 J**	**0.3 J**
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-31	**1 J**	1 U	**1.9 J**	**0.6 J**	1 U	**2**	**0.9 J**	1 U	**2.2 J**	**0.8 J**	1 U	**1**	**0.5 J**	1 UJ	**0.9 J**
MW-32	**1 J**	1 U	**1.1 J**	**1**	1 U	**2**	**0.6 J**	1 U	**0.6 J**	**0.7 J**	1 U	**1**	**0.7 J**	1 UJ	**0.5 J**
MW-41	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-19A	--	--	--	--	--	--	1 U	**0.5 J**	1 U	--	--	--	1 UJ	1 UJ	1 UJ
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-40	1 U	1 U	1 U	--	--	--	1 U	1 U	1 U	--	--	--	1 UJ	1 UJ	1 UJ
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Well	May 1993			December 1993			April 1994			November 1994			July 1995		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**44**	10 U	**2 J**	**13**	**0.3 J**	**0.7 J**	**33**	**0.6**	**1.4**	**9.7**	**0.3 J**	**0.5 J**	**27**	**0.5 J**	**0.8 J**
MW-20A	10 U	10 U	10 U	**0.3 J**	1 U	1 U	**0.4**	0.2 U	0.2 U	**0.3 J**	1 U	1 U	**0.4 J**	1 U	1 U
MW-20B	**700 D**	**12**	**21**	**187**	50 U	**8.2 J**	**472**	**8.6 J**	**12.6**	**86**	50 U	**3 J**	**340 D**	**8.4**	**17**
MW-21	**1 J**	10 U	10 U	**1.6**	1 U	**0.4 J**	**1.5**	**0.2 J**	**0.3**	**1.8**	**0.2 J**	**0.3 J**	--	--	--
MW-27	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-31	10 U	10 U	10 U	**0.8 J**	1 U	**1.2 J**	**0.7**	0.2 U	**1.0**	**0.8 J**	1 U	**1**	**0.6 J**	1 U	**0.5 J**
MW-32	10 U	10 U	10 U	**0.7 J**	1 U	**0.6 J**	**0.7**	0.2 U	**0.6**	**0.6 J**	1 U	**0.5 J**	**0.7 J**	1 U	**0.5 J**
MW-41	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-19A	--	--	--	1 U	**0.4**	1 U	0.2 U	**0.5**	0.2 U	--	--	--	1 U	**0.4 J**	1 U
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-40	--	--	--	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	--	--	--	1 U	1 U	1 U
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	**9**	**0.3 J**	1 U

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
UJ = The analyte was not detected at or above the reported estimated result.
D = Analysis performed at secondary dilution.
-- = Not tested
Bold = The analyte was positively identified.

Table 2 (cont.). Summary of Sample Results (ug/L) from January 1991 to September 2006

Well Number	January 1996			July 1996			January 1997			July 1997			February 1998		
	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**47 E**	**0.8 J**	**1.5**	**43**	**0.7 J**	**1.9**	**54**	**1.1**	**3.1**	**47**	**0.7 J**	**2.5**	**36**	**0.7 J**	**2 J**
MW-20A	**0.2 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.3 J**	1 U	2 U	**0.4 J**	1 U	1 U
MW-20B	**353**	**7.2**	**15**	**387**	**7.6**	**15**	**373**	100 U	**6.4 J**	**222**	**4**	**6.4**	**456**	**7 J**	**12**
MW-21	--	--	--	Well Decommissioned											
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U
MW-28A	1 U	1 U	1 U	Well Decommissioned											
MW-31	**0.6 J**	1 U	**0.7 J**	--	--	--	--	--	--	**0.9 J**	1 U	**0.9 J**	--	--	--
MW-32	**0.8 J**	1 U	**0.6 J**	--	--	--	--	--	--	--	--	--	--	--	--
MW-41	1 U	1 U	1 U	--	--	--	--	--	--	--	--	--	--	--	--
MW-19A	--	--	--	--	--	--	--	--	--	1 U	**0.3 J**	2 U	--	--	--
MW-33	--	--	--	1 U	1 U	1 U	--	--	--	1 U	1 U	2 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H1/H2	**8.4**	**0.2 J**	**0.2 J**	**0.14 J**	1 U	1 U	**18**	**0.4 J**	**0.4 J**	**8.8**	**0.3 J**	**0.6 J**	**11**	**0.4 J**	**0.3 J**

Well Number	July 1998			January 1999			August 1999			January 2000			August 2000		
	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**30**	1 U	**1.5 J**	--	--	--	**22**	**0.4 J**	**1.1**	**40**	**0.7 J**	**1.9**	**22**	**0.3 J**	**0.7**
MW-20A	**0.6 J**	1 U	1 U	1 U	2 U	1 U	**0.8 J**	2 U	1 U	**0.2 J**	2 U	1 U	**0.1 J**	2 U	1 U
MW-20B	**575 D**	**10**	**23**	**708**	**5.2**	**12**	**722**	**8.4 J**	**16 J**	**184**	**6**	**13**	**648**	200 U	100 U
MW-27	**0.05 J**	1 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U
MW-31	--	--	--	--	--	--	**0.9 J**	2 U	**0.4 J**	--	--	--	--	--	--
MW-32	--	--	--	--	--	--	--	--	--	--	--	--	**0.8 J**	2 U	1 U
MW-41	--	--	--	--	--	--	--	--	--	--	--	--	1 U	2 U	1 U
MW-19A	--	--	--	--	--	--	1 U	**0.4 J**	1 U	--	--	--	--	--	--
MW-33	1 U	1 U	1 U	--	--	--	1 U	2 U	1 U	--	--	--	1 U	2 U	1 U
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	1 U	2 U	1 U
H1/H2	**10**	1 U	**0.1 J**	**1.5**	1 U	1 U	**5.2**	**0.2 J**	1 U	**10**	1 U	1 U	**8.7**	**0.03 J**	1 U

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
D = Analysis performed at secondary dilution.
E = The concentration of the associated value exceeds the known calibration range.
-- = Not tested
Bold = The analyte was positively identified.

Table 2 (cont.). Summary of Sample Results (ug/L) from January 1991 to September 2006

Well	January 2001			August 2001			February 2002			August 2002			February 2003		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**31**	**0.4 J**	**1**	**25**	**0.3 J**	**0.7 J**	**47**	**0.8 J**	**2.3**	**22**	**0.3 J**	**0.8 J**	**59 J**	**0.2 J**	**2.4**
MW-20A	**0.2 J**	1 U	1 U	1 U	2 U	1 U	--	--	--	--	--	--	1 U	1 U	1 U
MW-20B	**493**	**6.6 J**	**12**	**486**	**8.2**	**18**	**248**	200 U	100 U	**371**	**8.5**	**16**	**230**	100 U	100 U
MW-27	1 U	1 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U
MW-31	--	--	--	**0.4 J**	2 U	**0.3 J**	--	--	--	--	--	--	--	--	--
MW-32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-19A	--	--	--	1 U	**0.3 J**	1 U	--	--	--	--	--	--	--	--	--
MW-33	--	--	--	1 U	2 U	1 U	--	--	--	1 U	1 U	1 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H1/H2	**11**	**0.2 J**	1 U	**6.8**	**0.2 J**	1 U	**12**	**0.2 J**	**0.2 J**	**6.1**	1 U	1 U	**1.3**	1 U	1 U

Well	September 2003			June 2004			November 2004			June 2005			November 2005		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**26**	**0.3 J**	**0.5 J**	**30**	**0.4 J**	**0.8 J**	**48**	1 U	**1.4**	**80.3**	**1.3**	**2.8**	**43**	**0.69 J**	**1.0 J**
MW-20A	**0.1 J**	1 U	1 U	**0.2 J**	1 U	1 U	**0.3 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-20B	**239**	**5.4 J**	**12**	**344**	**6.5 J**	**15**	**241**	**6.7**	**13**	**413**	**6.6**	**12**	**555**	**6.4**	**11**
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-31	**0.5 J**	1 U	**0.1 NJ**	--	--	--	--	--	--	**0.53 J**	1 U	1 U	--	--	--
MW-32	--	--	--	--	--	--	--	--	--	**1.4**	1 U	1 U	--	--	--
MW-41	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U	--	--	--
MW-19A	1 U	**0.4 NJ**	1 U	--	--	--	--	--	--	1 U	**0.57 J**	1 U	--	--	--
MW-33	1 U	1 U	1 U	--	--	--	--	--	--	1 U	1 U	1 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U	--	--	--
H1/H2	**6.4**	**0.2 NJ**	1 U	**7.9**	**0.24 J**	**0.1 J**	**2.6**	1 U	1 U	**14**	**0.31 J**	1 U	**6.4**	1 U	1 U

U = The analyte was not detected at or above the reported result.

J = The analyte was positively identified. The associated numerical result is an estimate.

-- = Not tested

Bold = The analyte was positively identified.

Table 2 (cont.). Summary of Sample Results (ug/L) from January 1991 to September 2006

Well Number	May 2006			September 2006		
	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**124**	**1.8**	**4.6**	**29**	**0.3 J**	**0.48 J**
MW-20A	1 U	1 U	1 U	1 U	1 U	1 U
MW-20B	**216**	**4.2**	**6.6**	**518**	**5.6**	**11**
MW-27	1 U	1 U	1 U	1 U	1 U	1 U
MW-31	--	--	--	--	--	--
MW-32	--	--	--	--	--	--
MW-41	--	--	--	--	--	--
MW-19A	--	--	--	--	--	--
MW-33	1 U	1 U	1 U	--	--	--
MW-40	--	--	--	--	--	--
H1/H2	**7.3**	**0.22 J**	1 U	**4.8**	1 U	1 U

U = The analyte was not detected at or above the reported result.

J = The analyte was positively identified. The associated numerical result is an estimate.

-- = Not tested

Bold = The analyte was positively identified.

ATTACHMENT 4

Ecology monitoring well report and data

A Department of Ecology Report

Lakewood Plaza Cleaners, May and September 2006 Groundwater Monitoring Results

Abstract

This progress report is one in a series describing results of long-term groundwater sampling at the former Lakewood Plaza Cleaners site south of Tacoma. Results of volatile organics in samples collected from seven monitoring wells and one municipal well in May 2006, and four monitoring wells and one municipal well in September 2006, are included.

- Monitoring wells MW-20B and MW-16A, as well as municipal well H1, continue to have tetrachloroethene (PCE) concentrations higher than the Model Toxic Control Act (MTCA) cleanup level of 5.0 ug/L. PCE concentrations in these wells during May and September were: MW-20B (216 and 518 ug/L), MW-16A (124 and 29 ug/L), and H1 (7.3 and 4.8 ug/L).
- PCE was also detected above the MTCA cleanup level in well LPMW-2 at a concentration of 9.9 ug/L. This well is located near the former septic system of Plaza Cleaners which was identified as the source of the contamination.
- Trichloroethene (TCE) was detected in MW-20B at concentrations of 4.2 and 5.6 ug/L, the latter of which exceeds the MTCA cleanup level for TCE of 5.0 ug/L.
- Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in wells MW-20B (6.6 and 11 ug/L) and MW-16A (4.6 and an estimated 0.48 J ug/L). The federal maximum contaminant level for cis-1,2-DCE is 70 ug/L.

Most concentrations remain within the range of those reported in previous samplings conducted since 1991. However, PCE concentrations in wells MW-20B and MW-16A appear to be rising. PCE concentrations in well MW-16A during the May 2006 sampling had increased to the highest levels detected in the well since the initial sampling in 1985 (110 ug/L). PCE concentrations in municipal well H1 remain near the MTCA cleanup level.

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by Pam Marti and Tanya Roberts

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This report was prepared by a licensed hydrogeologist. A signed and stamped copy of the report is available upon request.

Background

In 1981 the U.S. Environmental Protection Agency (EPA) confirmed that the Lakewood Water District production wells H1 and H2 (Pierce County, Washington) were contaminated with tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE). The source of the contamination was identified as the Lakewood Plaza Cleaners (EPA, 1983).

In 1991 the Washington State Department of Ecology (Ecology) began semi-annual, long-term groundwater monitoring at the site. The objective of this sampling is to collect groundwater quality data for Ecology's Toxics Cleanup Program to evaluate the effectiveness of Lakewood water supply wells H1 and H2 to contain and remove groundwater contaminated by Plaza Cleaners.

In 1996 the monitoring program was evaluated. Based on data collected from 1986 to 1996, it was decided to decommission half of the remaining wells and reduce the monitoring program to wells in the immediate vicinity of Plaza Cleaners. The monitoring program was evaluated again in August 2002. The current monitoring program was determined to be sufficient to meet project objectives (Ecology, 2002).

In December 2004, three monitoring wells (LPMW-1, LPMW-2, and LPMW-3) were installed on property adjoining the former Plaza Cleaners site. Because PCE was detected during the installations, these wells were added to this monitoring program in May 2006.

Methods

Groundwater Sampling

In May 2006, groundwater samples were collected from monitoring wells MW-16A, MW-20A, MW-20B, MW-27, MW-33, LPMW-2, and LPMW-3, and municipal well H1 (Figure 1). Well LPMW-1 could not be sampled because it was dry. In September 2006, groundwater samples were collected from MW-16A, MW-20A, MW-20B, MW-27, and municipal well H1. None of the three new wells could be sampled in September because they were either dry (LPMW-1, LPMW-2) or had an insufficient amount of water for the selected sampling method (LPMW-3).

Wells MW-16A, MW-20A, MW-27, and MW-33 are screened in the Advance Outwash deposits, the primary water-supply aquifer for the area. Groundwater flow direction in the Advance Outwash is west-northwest when municipal wells H1 and H2 are not in use. When in use, the wells create a large cone of depression (EPA, 1985). Well MW-20B is screened in the Vashon Till, which forms an aquitard over most of the site. The new wells (LPMW-1, LPMW-2, and LPMW-3), which range from 28-32 feet in depth, are screened in the Steilacoom Gravel, which generally contains perched water above the impermeable Vashon Till and regional water table.

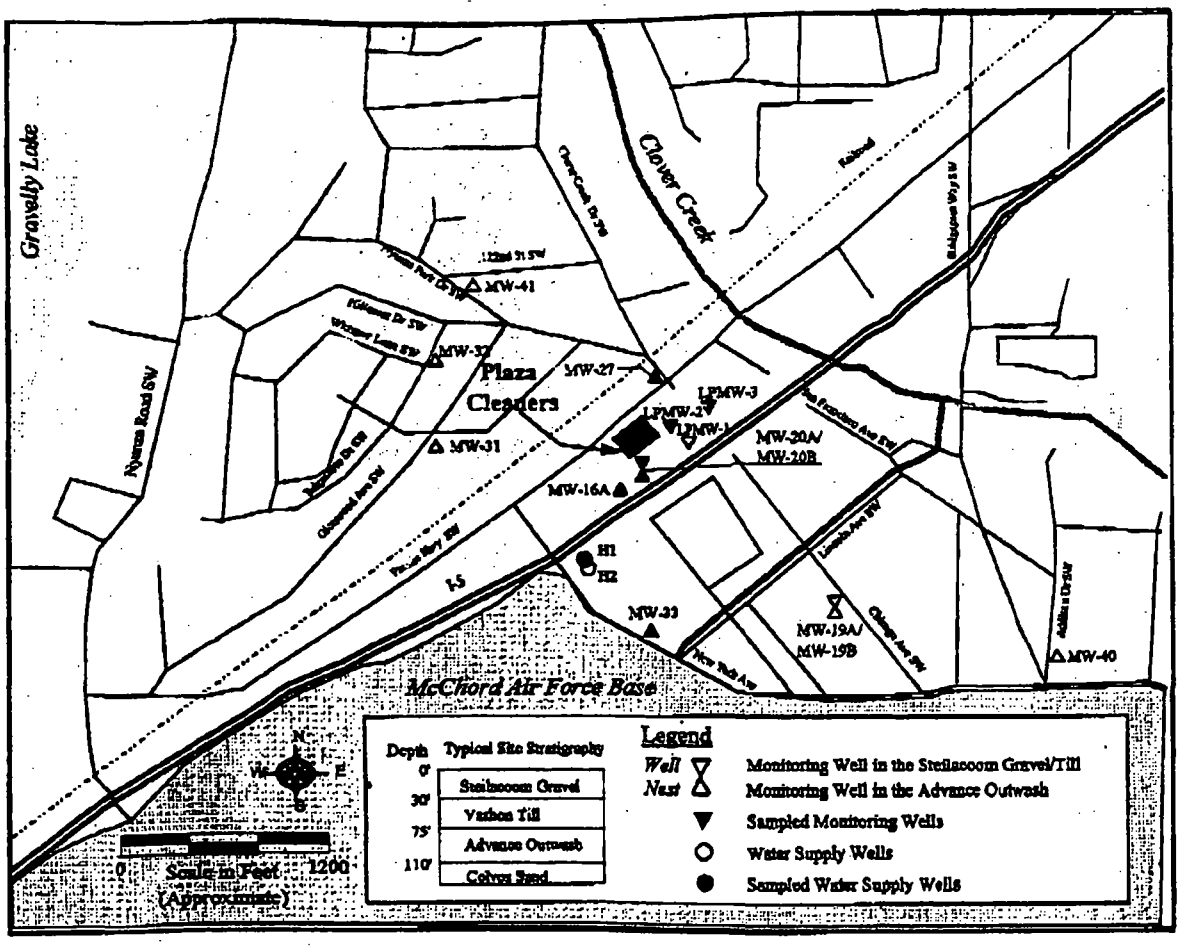


Figure 1: Sampling Locations at the former Lakewood Plaza Cleaners site

Static water levels were measured in all the wells using a calibrated Solinst water level meter prior to well purging and sampling. Measurements were recorded to 0.01 foot and are accurate to 0.03 foot. The probe was rinsed with deionized water between measurements.

In May, monitoring wells MW-16A, MW-20A, MW-27, and MW-33 were purged and sampled using dedicated bladder pumps. After sampling, the pump in MW-27 was removed so that the well could be refurbished. New wells LPMW-2 and LPMW-3 were purged and sampled with a stainless-steel submersible pump with dedicated tubing using low-flow sampling techniques. Well MW-20B, which does not have a dedicated pump, was purged and sampled with a decontaminated Teflon bailer.

In September, wells MW-16A and MW-20A were purged and sampled with the dedicated bladder pumps. Wells MW-20B and MW-27 were purged and sampled with the submersible pump.

The bailer used to sample well MW-20B in May was pre-cleaned with a Liquinox® wash and sequential rinses of hot tap water, 10% nitric acid, distilled/deionized water, and pesticide-grade acetone. After cleaning, the bailer was air-dried and wrapped in aluminum foil.

The submersible pump was decontaminated between wells by circulating laboratory grade detergent/water through the pump, followed by a clean water rinse with each cycle lasting five minutes.

The monitoring wells were purged until pH, temperature, and specific conductance readings stabilized or three well volumes of water had been removed. Purge water from the monitoring wells was collected and stored in 55-gallon drums. The purge water waste was transported and disposed of in accordance with Washington State regulations (Chapter 173-303 WAC). At the completion of purging, samples were collected from the monitoring wells directly from the dedicated pump discharge tubing into laboratory supplied containers. Municipal well H1, which pumps continuously, was sampled from a tap nearest the well.

Volatile organics samples were collected free of headspace in three 40-mL glass vials with Teflon-lined septa lids and preserved with 1:1 hydrochloric acid. After sample collection and proper labeling, all samples were stored in an ice-filled cooler. Samples were transported to Ecology's Operations Center in Lacey. Samples were kept in the walk-in cooler until taken by the courier to the Ecology/EPA Manchester Environmental Laboratory in Manchester, Washington. Chain-of-custody procedures were followed according to Manchester Laboratory protocol (Ecology, 2005).

Analysis

Table 1 lists analytes, analytical methods, and detection limits for both field and laboratory parameters. All groundwater samples were analyzed for volatile organics.

Table 1: Analytical Methods for May and September 2006 Samples

Analytes	*Method*	*Reference*	
Field			*Accuracy*
Water Level	Solinst Well Probe	NA	0.01 feet
pH	Orion 25A Field Meter	NA	0.1 standard units
Temperature	Orion 25A Field Meter	NA	0.1 Celsius degrees
Specific Conductance	Beckman Conductivity Bridge	NA	10 umhos/cm
Laboratory			*Reporting Limit*
Volatile Organics Analysis	SW-846 Method 8260	EPA, 1996	1-5 ug/L

The quality of the data is acceptable. Quality control samples collected in the field consisted of blind field duplicates obtained from well MW-16A. The numeric comparison of duplicate results is expressed as the relative percent difference (RPD). The RPD for PCE in May was 0% and in September was 7%.

In addition to field quality control samples, duplicate matrix spikes and surrogate compound recoveries were performed in the laboratory. Overall, matrix spikes and surrogate recoveries were within acceptable limits. Some analytes were outside the quality control limits and were qualified. It was determined that this did not affect the analytes of interest. Quality assurance case narratives and laboratory reporting sheets, with the complete list of volatile organics analyzed, are available upon request.

Results

Field Observations

Depth-to-water measurements and purge volume, as well as pH, specific conductance, and temperature readings, at the time of sampling are listed in Table 2.

Table 2: Summary of Field Parameters Results for May 22-23 and September 26, 2006

Well	Total Depth (feet)[1]	Depth to Water (feet)[1]	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)	Purge Volume (gallons)
May						
MW-16A	109	36.59	7.6	241	12.3	70
MW-20A	97.3	29.22	8.1	218	12.5	32
MW-20B	50.4	27.56	7.3	422	12.8	12
MW-27	96.4	++	6.5	193	11.9	33
MW-33	99.3	++	6.7	218	11.2	35
LPMW-2	29	22.62	6.3	217	14.0	3.5
LPMW-3	31.45	21.27	5.9	328	12.9	4.5
H1	110	++	6.1	190	11.8	>1000
September						
MW-16A	109	41.93	7.3	219	12.3	41
MW-20A	97.3	36.19	7.6	225	12.9	31
MW-20B	50.4	39.0	6.8	322	16.1	7
MW-27	96.4	34.20	6.7	191	13.6	19
H1	110	++	6.2	187	12.4	>1000

[1] Measured from top of PVC casing.
++ Dedicated pump obstructed water-level measurement.
– Well dry.

All field parameters were within expected ranges. The specific conductance in wells MW-20B (322-422 umhos/cm) and LPMW-3 (328 umhos/cm) were greater than the other wells. Well MW-20B is screened in a fine-grained till unit. LPMW-3 is screened in a very dense, gravelly, sandy silt. Specific conductance readings are typically higher for water from fine-grained units.

Analytical Results

Analytical results for volatile organics of interest are summarized in Table 3 and presented in Figure 2.

Table 3: Results (ug/L) of Volatile Organics of Interest for May 22-23 and September 26, 2006

Well	Tetrachloroethene (PCE)	Trichloroethene (TCE)	Cis-1,2-Dichloroethene (cis-1,2-DCE)
May			
MW-16A	**124**	**1.8**	**4.6**
MW-20A	1 U	1 U	1 U
MW-20B	**216**	**4.2**	**6.6**
MW-27	1 U	1 U	1 U
MW-33	1 U	1 U	1 U
LPMW-2	**9.9**	1 U	1 U
LPMW-3	1 U	1 U	1 U
H1	**7.3**	**0.22 J**	1 U
September			
MW-16A	**29**	**0.30 J**	**0.48 J**
MW-20A	1 U	1 U	1 U
MW-20B	**518**	**5.6**	**11**
MW-27	1 U	1 U	1 U
H1	**4.8**	1 U	1 U

Bold: Analyte detected.
U: Analyte was not detected at or above the reported value.
J: Analyte was positively identified. The associated numerical result is an estimate.

In May, PCE, TCE, and cis-1,2-DCE concentrations in well MW-20B were 216 ug/L, 4.2 ug/L, and 6.6 ug/L, respectively. PCE, TCE, and cis-1,2-DCE were also detected in monitoring well MW-16A at concentrations of 124 ug/L, 1.8 ug/L, and 4.6 ug/L, respectively. PCE was detected in municipal well H1 at a concentration of 7.3 ug/L. TCE was also detected near or below the practical quantitation limit of 1 ug/L in H1 in May as shown in Table 3. PCE was also detected in well LPMW-2 at a concentration of 9.9 ug/L. This well is located near the former septic system of Plaza Cleaners which was identified as the source of the contamination.

In September, PCE, TCE, and cis-1,2-DCE concentrations in well MW-20B were 518 ug/L, 5.6 ug/L, and 11 ug/L, respectively. PCE was detected in wells MW-16A and H1 at concentrations of 29 ug/L and 4.8 ug/L, respectively. TCE and cis-1,2-DCE were also detected in MW-16A at concentrations below the practical quantitation limit of 1 ug/L. Well LPMW-2 was not sampled in September due to the low water level.

Benzene and toluene were detected below the practical quantitation limit (1 ug/L) in wells MW-20A and LPMW-3 in May. These analytes have been detected periodically in the past, always at concentrations below the quantitation limits. There is no consistent pattern or clear explanation for the occurrence of these chemicals, although they are commonly elevated in urbanized areas.

Appendix. Summary of Sample Results (ug/L) from January 1991 to September 2006

Well	January 1991			May 1991			November 1991			May 1992			December 1992		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	28	1 J	2.4 J	26	0.6 J	2	2.7 J	1 U	0.6 J	7	1 U	1	9 J	0.3 J	0.8 J
MW-20A	1 U	1 U	1 U	0.4 J	1 U	1 U	0.4 J	1 U	1 U	0.5 J	1 U	1 U	0.8 J	1 UJ	1 UJ
MW-20B	1100 D	18	33	752	16	30	120	2.6 J	6.7	940	13	32	340 J	14 J	20 J
MW-21	2.1 J	1 U	1 J	2	1 U	0.7 J	2.2 J	1 U	1.0 J	2	1 U	0.6 J	2	0.2 J	0.3 J
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-31	1 J	1 U	1.9 J	0.6 J	1 U	2	0.9 J	1 U	2.2 J	0.8 J	1 U	1	0.5 J	1 UJ	0.9 J
MW-32	1 J	1 U	1.1 J	1	1 U	2	0.6 J	1 U	0.6 J	0.7 J	1 U	1	0.7 J	1 UJ	0.5 J
MW-41	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-19A	--	--	--	--	--	--	1 U	0.5 J	1 U	--	--	--	1 UJ	1 UJ	1 UJ
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-40	1 U	1 U	1 U	--	--	--	1 U	1 U	1 U	--	--	--	1 UJ	1 UJ	1 UJ
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Well	May 1993			December 1993			April 1994			November 1994			July 1995		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	44	10 U	2 J	13	0.3 J	0.7 J	33	0.6	1.4	9.7	0.3 J	0.5 J	27	0.5 J	0.8 J
MW-20A	10 U	10 U	10 U	0.3 J	1 U	1 U	0.4	0.2 U	0.2 U	0.3 J	1 U	1 U	0.4 J	1 U	1 U
MW-20B	700 D	12	21	187	50 U	8.2 J	472	8.6 J	12.6	86	50 U	3 J	340 D	8.4	17
MW-21	1 J	10 U	10 U	1.6	1 U	0.4 J	1.5	0.2 J	0.3	1.8	0.2 J	0.3 J	--	--	--
MW-27	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-31	10 U	10 U	10 U	0.8 J	1 U	1.2 J	0.7	0.2 U	1.0	0.8 J	1 U	1	0.6 J	1 U	0.5 J
MW-32	10 U	10 U	10 U	0.7 J	1 U	0.6 J	0.7	0.2 U	0.6	0.6 J	1 U	0.5 J	0.7 J	1 U	0.5 J
MW-41	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-19A	--	--	--	1 U	0.4	1 U	0.2 U	0.5	0.2 U	--	--	--	1 U	0.4 J	1 U
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-40	--	--	--	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	--	--	--	1 U	1 U	1 U
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	9	0.3 J	1 U

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
UJ = The analyte was not detected at or above the reported estimated result.
D = Analysis performed at secondary dilution.
-- = Not tested
Bold = The analyte was positively identified.

Appendix (cont.). Summary of Sample Results (ug/L) from January 1991 to September 2006

Well	January 1996			July 1996			January 1997			July 1997			February 1998		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	47 E	0.8 J	1.5	43	0.7 J	1.9	54	1.1	3.1	47	0.7 J	2.5	36	0.7 J	2 J
MW-20A	0.2 J	1 U	1 U	0.4 J	1 U	1 U	0.4 J	1 U	1 U	0.3 J	1 U	2 U	0.4 J	1 U	1 U
MW-20B	353	7.2	15	387	7.6	15	373	100 U	6.4 J	222	4	6.4	456	7 J	12
MW-21	--	--	--	Well Decommissioned											
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U
MW-28A	1 U	1 U	1 U	Well Decommissioned											
MW-31	0.6 J	1 U	0.7 J	--	--	--	--	--	--	0.9 J	1 U	0.9 J	--	--	--
MW-32	0.8 J	1 U	0.6 J	--	--	--	--	--	--	--	--	--	--	--	--
MW-41	1 U	1 U	1 U	--	--	--	--	--	--	--	--	--	--	--	--
MW-19A	--	--	--	--	--	--	--	--	--	1 U	0.3 J	2 U	--	--	--
MW-33	--	--	--	1 U	1 U	1 U	--	--	--	1 U	1 U	2 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H1/H2	8.4	0.2 J	0.2 J	0.84 J	1 U	1 U	18	0.4 J	0.4 J	8.8	0.3 J	0.6 J	11	0.4 J	0.3 J

Well	July 1998			January 1999			August 1999			January 2000			August 2000		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	30	1 U	1.5 J	--	--	--	22	0.4 J	1.1	40	0.7 J	1.9	22	0.3 J	0.7
MW-20A	0.6 J	1 U	1 U	1 U	2 U	1 U	0.8 J	2 U	1 U	0.2 J	2 U	1 U	0.1 J	2 U	1 U
MW-20B	575 D	10	23	708	5.2	12	722	8.4 J	16 J	184	6	13	648	200 U	100 U
MW-27	0.05 J	1 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U
MW-31	--	--	--	--	--	--	0.9 J	2 U	0.4 J	--	--	--	--	--	--
MW-32	--	--	--	--	--	--	--	--	--	--	--	--	0.8 J	2 U	1 U
MW-41	--	--	--	--	--	--	--	--	--	--	--	--	1 U	2 U	1 U
MW-19A	--	--	--	--	--	--	1 U	0.4 J	1 U	--	--	--	--	--	--
MW-33	1 U	1 U	1 U	--	--	--	1 U	2 U	1 U	--	--	--	1 U	2 U	1 U
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	1 U	2 U	1 U
H1/H2	10	1 U	0.1 J	1.5	1 U	1 U	5.2	0.2 J	1 U	10	1 U	1 U	8.7	0.03 J	1 U

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
D = Analysis performed at secondary dilution.
E = The concentration of the associated value exceeds the known calibration range.
-- = Not tested
Bold = The analyte was positively identified.

Appendix (cont.). Summary of Sample Results (ug/L) from January 1991 to September 2006

Well	January 2001			August 2001			February 2002			August 2002			February 2003		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	31	0.4 J	1	25	0.3 J	0.7 J	47	0.8 J	2.3	22	0.3 J	0.8 J	59 J	0.2 J	2.4
MW-20A	0.2 J	1 U	1 U	1 U	2 U	1 U	--	--	--	--	--	--	1 U	1 U	1 U
MW-20B	493	6.6 J	12	486	8.2	18	248	200 U	100 U	371	8.5	16	230	100 U	100 U
MW-27	1 U	1 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U
MW-31	--	--	--	0.4 J	2 U	0.3 J	--	--	--	--	--	--	--	--	--
MW-32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-19A	--	--	--	1 U	0.3 J	1 U	--	--	--	--	--	--	--	--	--
MW-33	--	--	--	1 U	2 U	1 U	--	--	--	1 U	1 U	1 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H1/H2	11	0.2 J	1 U	6.8	0.2 J	1 U	12	0.2 J	0.2 J	6.1	1 U	1 U	1.3	1 U	1 U

Well	September 2003			June 2004			November 2004			June 2005			November 2005		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	26	0.3 J	0.5 J	30	0.4 J	0.8 J	48	1 U	1.4	80.3	1.3	2.8	43	0.69 J	1.0 J
MW-20A	0.1 J	1 U	1 U	0.2 J	1 U	1 U	0.3 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-20B	239	5.4 J	12	346	6.5 J	15	241	6.7	13	413	6.6	12	555	6.4	11
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-31	0.5 J	1 U	0.1 NJ	--	--	--	--	--	--	0.53 J	1 U	1 U	--	--	--
MW-32	--	--	--	--	--	--	--	--	--	1.4	1 U	1 U	--	--	--
MW-41	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U	--	--	--
MW-19A	1 U	0.4 NJ	1 U	--	--	--	--	--	--	1 U	0.57 J	1 U	--	--	--
MW-33	1 U	1 U	1 U	--	--	--	--	--	--	1 U	1 U	1 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U	--	--	--
H1/H2	6.4	0.2 NJ	1 U	7.9	0.24 J	0.1 J	2.6	1 U	1 U	14	0.31 J	1 U	6.4	1 U	1 U

U = The analyte was not detected at or above the reported result.

J = The analyte was positively identified. The associated numerical result is an estimate.

-- = Not tested

Bold = The analyte was positively identified.

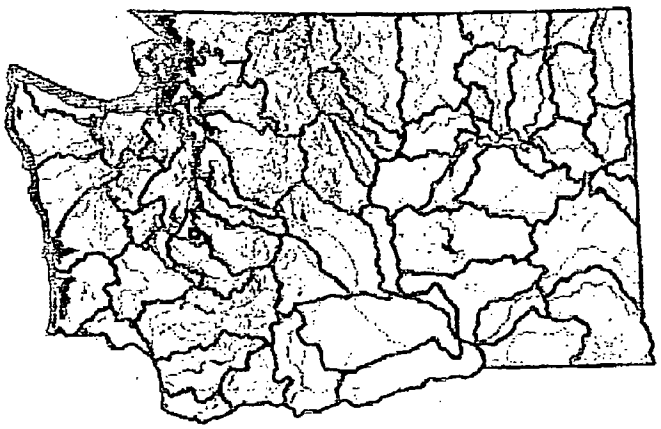
Appendix (cont.). Summary of Sample Results (ug/L) from January 1991 to September 2006

Well	May 2006			September 2006		
Number	PCE	TCE	cis-1,2-DCE	PCE	TCE	cis-1,2-DCE
MW-16A	**124**	**1.8**	**4.6**	**29**	**0.3 J**	**0.48 J**
MW-20A	1 U	1 U	1 U	1 U	1 U	1 U
MW-20B	**216**	**4.2**	**6.6**	**518**	**5.6**	**11**
MW-27	1 U	1 U	1 U	1 U	1 U	1 U
MW-31	--	--	--	--	--	--
MW-32	--	--	--	--	--	--
MW-41	--	--	--	--	--	--
MW-19A	--	--	--	--	--	--
MW-33	1 U	1 U	1 U	--	--	--
MW-40	--	--	--	--	--	--
H1/H2	**7.3**	**0.22 J**	1 U	**4.8**	1 U	1 U

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
-- = Not tested
Bold = The analyte was positively identified.

Publication Summary

TITLE	**Lakewood Plaza Cleaners, June and November 2004 Groundwater Monitoring Results**
MONTH-YEAR PUBLISHED	December 2004
ONLINE AVAILABILITY	View this publication in Acrobat PDF format 107 kilobytes, requires version 4.0 or later of Adobe Acrobat Reader Software *get Acrobat Reader*
SHORT DESCRIPTION	Annual groundwater monitoring at Lakewood Plaza Cleaners was conducted in June and November 2004. Three wells continue to have PCE concentrations that exceed the MTCA cleanup standard of 5.0 ug/L: monitoring wells MW-20B (344 and 241 ug/L) and MW-16A (30 and 48 ug/L), and municipal well H1 (7.9 and 2.6 ug/L). TCE was detected in MW-20B at concentrations of 6.5 and 6.7 ug/L, which exceeds the MTCA cleanup standard of 5.0 ug/L. Cis-1,2-DCE was detected in MW-20B (15 and 13 ug/L) and MW-16A (0.84J and 1.4 ug/L); the federal MCL for cis-1,2-DCE is 70 ug/L. Overall, concentrations are similar to those reported in previous sampling rounds. *(Also see abstract below)*
PUBLICATION NUMBER	04-03-054
AUTHOR(S)	Marti, P.
PRINT AVAILABILITY	Request from the program.
NUMBER OF PAGES	16 p.
KEYWORDS	groundwater, Model Toxic Control Act, monitoring, results, toxic, wells
SUBJECT WATERBODIES	Clover Creek



RELATED PUBLICATIONS	TITLE	RELATIONSHIP
	Lakewood/Plaza Cleaners, January and August 2000 Groundwater Monitoring Sampling Results	similar topic
	Lakewood Plaza Cleaners, January and August 2001 Groundwater Monitoring Sampling Results	similar topic
	Lakewood Plaza Cleaners, February and August 2002 Groundwater Monitoring Sampling Results	similar topic
	Lakewood Plaza Cleaners, February and September 2003 Groundwater Monitoring Results	similar topic

	Lakewood Plaza Cleaners, June and November 2005 Groundwater Monitoring Results	similar topic

ABSTRACT

LONG DESCRIPTION

This progress report is one in a series describing results of long-term groundwater sampling at Lakewood Plaza Cleaners in south Tacoma. Results of volatile organics in samples collected from fou monitoring wells and one municipal well in June and November 2004 are included.

- Monitoring wells MW-20B and MW-16A, as well as municipal well H1, continue to have tetrachloroethene (PCE) concentrations exceeding the Model Toxic Control Act (MTCA) cleanup standard of 5.0 ug/L. PCE concentrations in these wells during June and November were MW-20B (344 and 241 ug/L), MW-16A (30 and 48 ug/L), and H1 (7.9 and 2.6 ug/L).
- Trichloroethene (TCE) also was detected in MW-20B at concentrations of 6.5 and 6.7 ug/L, which exceeds the MTCA cleanup standard for TCE of 5.0 ug/L.
- Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in wells MW-20B (15 and 13 ug/L) and MW-16A (0.84 estimated and 1.4 ug/L). The federal maximum contaminant level for cis-1,2-DCE is 70 ug/L.

Overall, concentrations are similar to those reported in previous samplings conducted since 1991. PCE concentrations continue to be elevated in monitoring wells MW-20B and MW-16A, as well as in municipal well H1.

Link to EIM data for User Study ID LAKEWOOD

This page last updated October 16, 2006

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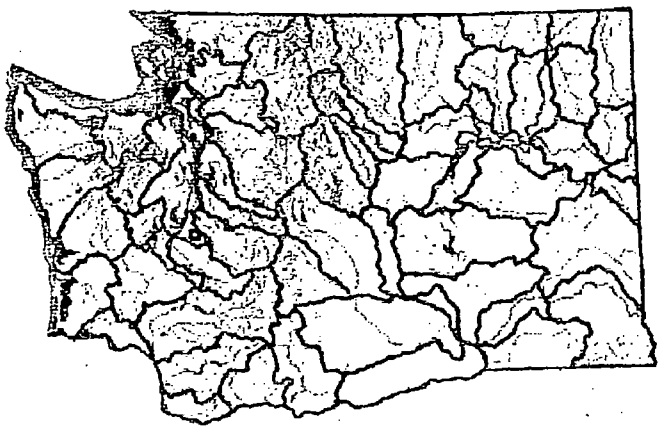
Publication Summary

TITLE	**Lakewood Plaza Cleaners, June and November 2005 Groundwater Monitoring Results**
MONTH-YEAR PUBLISHED	January 2006
ONLINE AVAILABILITY	View this publication in Acrobat PDF format 316 kilobytes, requires version 4.0 or later of Adobe Acrobat Reader Software *get Acrobat Reader*
SHORT DESCRIPTION	Annual groundwater monitoring at Lakewood Plaza Cleaners was conducted in June and November 2005. Three wells continue to have PCE concentrations that do not meet (exceed) the MTCA cleanup standard of 5.0 ug/L: monitoring wells MW-20B (413 and 555 ug/L) and MW-16A (80.3 and 43 ug/L), and municipal well H2 (14 and 6.4 ug/L). TCE was detected in MW-20B at concentrations of 6.6 and 6.4 ug/L, which exceed the MTCA cleanup standard of 5.0 ug/L. Most concentrations are within the range of values reported in previous samplings. From November 2004 to November 2005, PCE concentrations more than doubled in MW-20B. PCE concentrations in well MW-16A detected in June 2005 also had increased. *(Also see abstract below)*
PUBLICATION NUMBER	06-03-010
AUTHOR(S)	Marti, P. and T. Roberts
PRINT AVAILABILITY	Request from the program.
NUMBER OF PAGES	18
KEYWORDS	groundwater, Model Toxic Control Act, monitoring, results, toxic, wells
SUBJECT WATERBODIES	Clover Creek



RELATED PUBLICATIONS	TITLE	RELATIONSHIP
	Lakewood Plaza Cleaners, June and November 2004 Groundwater Monitoring Results	part of a series
	Lakewood Plaza Cleaners, May and September 2006 Groundwater Monitoring Results	part of a series

ABSTRACT

LONG DESCRIPTION

This progress report is one in a series describing results of long-term groundwater sampling at Lakewood Plaza Cleaners south of Tacoma. Results of volatile organics in samples collected from ten

monitoring wells and one municipal well in June 2005, and four monitoring wells and one municipal well in November 2005, are included.

- Monitoring wells MW-20B and MW-16A, as well as municipal well H2, continue to have tetrachloroethene (PCE) concentrations exceeding the Model Toxic Control Act (MTCA) cleanup standard of 5.0 ug/L. PCE concentrations in these wells during June and November were: MW-20B (413 and 555 ug/L), MW-16A (80.3 and 43 ug/L), and H2 (14 and 6.4 ug/L).
- Trichloroethene (TCE) also was detected in MW-20B at concentrations of 6.6 and 6.4 ug/L, which exceeds the MTCA cleanup standard for TCE of 5.0 ug/L.
- Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in wells MW-20B (12 and 11 ug/L) and MW-16A (2.8 and an estimated 0.96 ug/L). The federal maximum contaminant level for cis-1,2-DCE is 7 ug/L.

Although most concentrations are within the range of those reported in previous samplings conducted since 1991, PCE concentrations more than doubled in MW-20B from November 2004 to November 2005. PCE concentrations in well MW-16A detected in June 2005 also had increased, and PCE concentrations in municipal well H2 continue to be elevated.

Link to EIM data for User Study ID LAKEWOOD

This page last updated April 11, 2007

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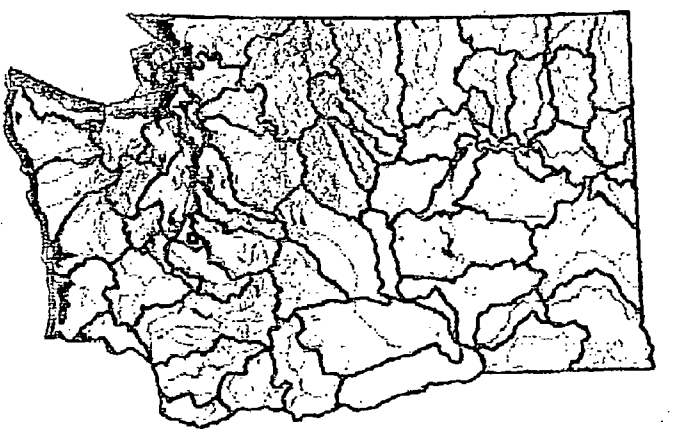
Publication Summary

TITLE	**Lakewood Plaza Cleaners, May and September 2006 Groundwater Monitoring Results**
MONTH-YEAR PUBLISHED	March 2007
ONLINE AVAILABILITY	View this publication in Acrobat PDF format 121 kilobytes, requires version 4.0 or later of Adobe Acrobat Reader Software *get Acrobat Reader*
SHORT DESCRIPTION	Annual groundwater monitoring at the former Lakewood Plaza Cleaners site was conducted during May and September 2006. Four wells had PCE concentrations that exceeded the MTCA cleanup level of 5.0 ug/L: monitoring wells MW-20B (216 and 518 ug/L), MW-16A (29 and 124 ug/L), LPMW-2 (9.9 ug/L), and municipal well H1 (7.3 ug/L). Well MW-20B had a TCE concentration (5.6 ug/L) that exceeded the MTCA cleanup level of 5.0 ug/L. Cis-1,2-DCE was detected in MW-20B (6.6 and 11 ug/L) and MW-16A (4.6 and 0.48J ug/L); the federal MCL for cis-1,2-DCE is 70 ug/L. PCE concentrations in wells MW-20B and MW-16 appear to be rising. *(Also see abstract below)*
PUBLICATION NUMBER	07-03-013
AUTHOR(S)	Marti, P., and T. Roberts
PRINT AVAILABILITY	Request from the program.
NUMBER OF PAGES	19 pp.
KEYWORDS	groundwater, Model Toxic Control Act, monitoring, toxic, wells
SUBJECT WATERBODIES	Clover Creek



RELATED PUBLICATIONS	TITLE	RELATIONSHIP
	Lakewood Plaza Cleaners, June and November 2005 Groundwater Monitoring Results	part of a series

ABSTRACT

LONG DESCRIPTION

This progress report is one in a series describing results of long-term groundwater sampling at the former Lakewood Plaza Cleaners site south of Tacoma. Results of volatile organics in samples collected from seven monitoring wells and one municipal well in May 2006, and four monitoring well and one municipal well in September 2006, are included.

- Monitoring wells MW-20B and MW-16A, as well as municipal well H1, continue to have tetrachloroethene (PCE) concentrations higher than the Model Toxic Control Act (MTCA) cleanup leve of 5.0 ug/L. PCE concentrations in these wells during May and September were: MW-20B (216 and 518 ug/L), MW-16A (124 and 29 ug/L), and H1 (7.3 and 4.8 ug/L).
- PCE was also detected above the MTCA cleanup level in well LPMW-2 at a concentration of 9.9 ug/L. This well is located near the former septic system of Plaza Cleaners which was identified as the source of the contamination.
- Trichloroethene (TCE) was detected in MW-20B at concentrations of 4.2 and 5.6 ug/L, the latter c which exceeds the MTCA cleanup level for TCE of 5.0 ug/L.
- Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in wells MW-20B (6.6 and 11 ug/L) and MW-16A (4.6 and an estimated 0.48 J ug/L). The federal maximum contaminant level for cis-1,2-DCE is 70 ug/L.

Most concentrations remain within the range of those reported in previous samplings conducted sinc 1991. However, PCE concentrations in wells MW-20B and MW-16A appear to be rising. PCE concentrations in well MW-16A during the May 2006 sampling had increased to the highest levels detected in the well since the initial sampling in 1985 (110 ug/L). PCE concentrations in municipal well H1 remain near the MTCA cleanup level.

Link to EIM data for User Study ID LAKEWOOD

This page last updated April 11, 2007

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ATTACHMENT 5

List of documents reviewed

List of documents reviewed

Record of Decision, Remedial Alternative Selection, September 30, 1985

Explanation of Significant Differences, September 15, 1992

Third Five-Year Review Report, September 2002

Ecology monitoring well reports and data

ATTACHMENT 6

Transfer of Operation & Maintenance responsibilities from EPA to the State (Ecology), related documents

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

July 29, 1997

Reply to
Attn of: ECL-115

Mary E. Burg, Program Manager
Washington Department of Ecology
Toxics Cleanup Program
P.O. Box 47600
Olympia, Washington 98504-7600

Re: Lakewood/Ponders Corner Superfund Site, Tacoma, Washington

Dear Ms. Burg: Mary

This letter is written as a follow-up to the July 1, 1997 meeting attended by Monica Tonel of my staff, Ed Kowalski of the U.S. Environmental Protection Agency (EPA) Office of Regional Counsel, representatives of the Lakewood Water District, and Peter Brooks and Michael Ruef of your office. I have been informed of the issues raised by the Washington Department of Ecology (Ecology) regarding the Ponders Corner Superfund Site. Specifically, those issues pertaining to:

- the operation and maintenance (O&M) responsibilities for remedial actions at the Ponders Corner Superfund Site,
- responsibility for costs associated with O&M; and
- ownership of property and equipment associated with the cleanup of this site.

I have discussed these issues with my staff and with the EPA Office of Regional Counsel. Regarding O&M responsibilities for remedial actions at this site, it is our view that given the Superfund State Contract (SSC) entered into by EPA and Ecology pursuant to Sections 104(a)(1), (c)(2) and (c)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), the State has already agreed to provide or otherwise assure O&M of remedial actions at the Lakewood/Ponders Corner Superfund Site for the expected life of such actions. The State's responsibilities for O&M of the remedial actions at this site began in November of 1994, ten (10) years after construction, installation and commencement of the groundwater treatment system. Since 1991, Ecology has been conducting semi-annual ground-water compliance monitoring at the site. We are appreciative of Ecology's efforts. However, we wish to make it clear that there remain other O&M responsibilities that the State must provide or otherwise assure. Those include:

- Activities involving O&M of the air stripping facility and existing groundwater monitoring wells.
- Compliance monitoring of the air stripping facility.
- Decommissioning, dismantling, and disposing of the air strippers and associated equipment.
- Abandonment and decommissioning of existing groundwater monitoring wells.

Regarding payment of O&M costs, it is clear that the State is now responsible for providing or otherwise assuring 100% of all associated costs [the 10-year, 90 percent EPA cost-share for this site has reached completion]. The statutory and regulatory provisions regarding O&M and associated

funding are covered in the Federal Register (March 8, 1990) beginning with the Preamble to Section 300.435(f) on page 8736 and in Subsections 104(c)(3) and (6) of CERCLA, as amended.

Regarding the issue of ownership of property associated with the cleanup at this site, it is our view that, in agreeing to the SSC and in accordance with the provisions of EPA's assistance regulations for property management, 40 CFR Part 30, the title to any property created pursuant to the SSC vests with the State. This includes the air stripping facility and associated equipment as well as the existing groundwater monitoring wells. Title to the property and equipment vested with the State upon completion of the construction. Moreover, EPA does not hold title to the property/equipment or retain any interest in the property/equipment that was part of the remedy for this site other than that set forth in 40 CFR Part 30; i.e. the State shall request and record EPA's security interest in any disposal.

We believe that our response to the issues raised by Ecology is consistent with the use of the Fund to implement the clear mandates of CERCLA. Hence, EPA's responsibilities for this site are those defined below:

- Maintain the Lakewood/Ponders Corner Site File and Administrative Record.
- Respond to citizen requests for information regarding cleanup activities conducted at the site.
- Conduct Five-Year Reviews of the site, as warranted.
- Delete the site from the National Priorities List (NPL). EPA shall consult and provide the State with a copy of the deletion package before deleting the site from the NPL.

As EPA's views regarding O&M responsibilities at this site were previously communicated to Ecology during a meeting attended by both parties in March 1993, we hope that the above further clarifies EPA's position on these matters. Furthermore, in a letter from EPA to Ecology, dated March 25, 1997, an Amendment to the SSC was transmitted in which a provision for State takeover of O&M at this site was provided. Payment of $39,350 for the State's outstanding cost-share of the remedial action was also requested. EPA was informed by representatives of Ecology that payment would be made pending further discussion of O&M responsibilities at this site. We hope that this letter clears any outstanding questions and provides the State with the information it needs to comfortably make payment on its outstanding cost-share balance.

Should you or members of your staff have any questions regarding this, please contact Ms. Tonel, EPA Site Manager, and we will gladly arrange for a meeting to discuss this site. Ms. Tonel can be contacted at (206) 553-0323.

Sincerely,

Michael F. Gearheard, Associate Director
Environmental Cleanup Office

cc: Michael Ruef, Ecology
Peter Brooks, Ecology
Monica Tonel, EPA
Ed Kowalski, EPA

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

September 25, 1997

Mr. Michael F. Gearheard, Associate Director
U. S. Environmental Protection Agency
Region 10, Environmental Cleanup Office
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Mike Gearheard:

Thank you for your letter of July, 29, 1997, which was in response to a meeting held on July 1, 1997, among our respective staff regarding the Lakewood/Ponders Corner Superfund Site, Tacoma. In that letter, you identified the issues of their discussion as:

- whether the ground water remediation is in the operations and maintenance phase;
- responsibilities of each party if the site is determined to be in the operation-and maintenance phase; and
- ownership of the equipment associated with the cleanup.

After careful review of CERCLA, the National Contingency Plan, and relevant project documents, Ecology concurs with the EPA that the project is now in the operation-and-maintenance phase. As such, the costs of operation and maintenance of the ground water remedy are now Ecology's responsibility. At the time the remedy was put in place, all parties believed that the remedial action objectives would be reached in about ten years. It is now apparent that our assumptions were in error and the remedy is wearing out before the remedial action objectives have been attained. Many of the components of the remedial system may have to be replaced soon. This would require, in effect, rebuilding the remedy and will force Ecology to bear significant unanticipated expenses. This has been the reason for our reluctance to assume operation and maintenance at this site. Since we accept that the ground water remedy is in the operation-and-maintenance phase, it is now necessary to agree on each party's responsibilities. As stated in your July 29 letter, EPA's responsibilities will be to:

- maintain the Lakewood/Ponders Corner Site File and Administrative Record;
- respond to citizen requests for information regarding cleanup activities conducted at the site;

- conduct five-year reviews of the site, as warranted; and
- delete the site from the National Priorities List at the appropriate time after consultation with the State.

Ecology's operation-and-maintenance responsibilities will consist of:

- operation and maintenance of the air stripping facility and existing ground water monitoring wells;
- compliance monitoring of the air stripping facility;
- decommissioning, dismantling, and disposing of the air strippers and associated equipment; and
- abandoning and decommissioning of existing ground water monitoring wells.

The Lakewood Water District, in previous correspondence and again during the meeting on July 1, 1997, agreed to assume the cost of routine operation and maintenance of the remedy. Ecology's operation-and-maintenance responsibilities will consist of providing capital for the replacement of major system components.

The state also agrees that it now owns the equipment which comprises the remedy. Therefore, at the conclusion of the remedy, we may use the equipment at another site or sell it for salvage after recording EPA's security interest.

Regarding the requested payment of $39,350 for the state's outstanding cost-share balance, we are willing to make that payment now. However, we do not want such payment to suggest that the remediation of this site is complete. In fact, as stated previously, the remedial action objectives for the ground water remedy have not been met. It is conceivable that EPA and Ecology may conclude that some other additional remedial actions are required. We do not want our payment to preclude the possibility of further remedial actions being taken at this site under a State Superfund Contract at the 90% Federal, 10% State cost-sharing arrangement. Per the conversation that Peter Brooks of my staff had with Amber Wong and Ann Williamson on August 22, 1997, it is our understanding that if the existing remedy fails to meet remedial action objectives, we should approach EPA for a practicability waiver. The outcome of this could be to implement new and/or additional remedies at this site under a new State/Superfund Contract.

Previously, we had received a draft copy of Amendment #7 to the Superfund State Contract for the Lakewood Site. It is now appropriate to execute that contract. Please forward to us two

copies of that amendment signed by the appropriate person at EPA. The signature block for Ecology should have my name.

Thank you for your attention to this matter. I appreciate your patience in resolving these issues.

Sincerely,

Mary E. Burg, Program Manager
Toxics Cleanup Program

MEB:cp

cc: Randy Black, Lakewood Water District
Monica Tonel, EPA
Michael Ruef, Toxics Cleanup Program, Ecology
Peter Brooks, Toxics Cleanup Program, Ecology
Kathy Gerla, Office of Attorney General, Ecology Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

October 16,1997

Reply to
Attn of: ECL-117

Mary E. Burg, Program Manager
Washington Department of Ecology
Toxics Cleanup Program
P.O. Box 47600
Olympia, Washington 98504-7600

Dear Ms. Burg:

This is to acknowledge our receipt of your letter, dated September 25, 1997, and to transmit two copies of Amendment #7 to the Superfund State Contract (SSC) for the Lakewood/Ponders Corner Superfund Site, Tacoma.

EPA appreciates the state's willingness to make payment on its outstanding cost-share balance and agrees that if the existing remedy fails to meet remedial action objectives, Ecology should consider approaching EPA for a technical impracticability waiver. A potential result of this would be to implement new and/or additional remedies at this site under a new State/Superfund Contract.

Enclosed please find two copies of Amendment #7 to the SSC. The copies, deemed as originals, are being provided for your signature. Please retain one original for your purposes and return the other to EPA. The signed document can be mailed to EPA Region 10, 1200 Sixth Ave. (ECL-115), Seattle, Washington 98101, Attn: Monica Tonel.

Thank you for your attention and responsiveness to this matter.

Sincerely,

Michael F. Gearheard, Associate Director
Environmental Cleanup Office

Enclosure

cc: (w/o Enclosure)
Michael Ruef, Toxics Cleanup Program, Ecology
Peter Brooks, Toxics Cleanup Program, Ecology
Monica Tonel, EPA

SUPERFUND STATE CONTRACT
LAKEWOOD SITE
AMENDMENT # 7

A. GENERAL AUTHORITY

This Amendment is entered into pursuant to §§ 104(a)(1), (c)(2), and (c)(3) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 U.S.C. 9601 et seq., as amended; the National Oil and Hazardous Substances Pollution Contingency Plan, 55 F.R. 8666 et seq. (40 CFR Part 300, March 8, 1990, hereinafter referred to as the "NCP"); other applicable Federal regulations including 40 CFR Part 35, Subpart O, and 40 CFR Part 31; and RCW 70.105(D).

B. PURPOSE OF THIS SUPERFUND STATE CONTRACT (SSC) AMENDMENT

This Contract Amendment is an agreement between the United States Environmental Protection Agency (EPA) and the State of Washington, Department of Ecology (Ecology). The Governor has designated the Department of Ecology to interact with EPA on behalf of the State of Washington (the "State"), concerning response actions, in order to conduct remedial action at the Lakewood site. The original Contract was signed April 18, 1986, and was amended six times, most recently on August 23, 1993.

The current Amendment provides a final cost estimate for the Remedial Action, provision for state takeover of Operations and Maintenance at the site and provision for EPA responsibilties at the site.

C. PARTIES

EPA has designated Monica Tonel to replace Ann Williamson as Remedial Project Manager(RPM) for this Contract. Her address is: EPA, Mail Stop ECL-115, 1200 6th Avenue, Seattle, WA 98101, and her phone number is (206) 553-0323.

D. EPA RESPONSIBILITIES

9. EPA's responsibilities for this site will be to:
   - maintain the Lakewood/Ponders Corner Site File and Administrative Record;
   - respond to citizen requests for information regarding cleanup activities conducted at the site;
   - conduct five-year reviews of the site, as warranted; and
   - delete the site from the National Priorities List at the appropriate time after consultation with the State.

E. STATE RESPONSIBILITIES

4. The State hereby assures that the operation and maintenance (O & M) of implemented CERCLA-funded remedial actions, provided under this Contract, will remain in effect for the expected life of such actions. The State

guarantees that, if the designated agent, Ecology, conducting O & M on behalf of the State, defaults, the State will be held accountable for all O & M activities, pursuant to § 104(c)(3)(A) of CERCLA, as amended. In addition, the State assures that institutional controls, considered part of O & M, will be monitored and retained, as part of O & M. Ecology's O & M responsibilities will consist of:

- operation and maintenance of the air stripping facility and existing ground water monitoring wells;
- compliance monitoring of the air stripping facility;
- decommissioning, dismantling, and disposing of the air strippers and associated equipment; and
- abandoning and decommissioning of existing ground water monitoring wells.

F. COST-SHARE CONDITIONS

1. The estimated final cost of the remedial action is now $1,290,000. This estimate is based on the total amount obligated by EPA for remedial actions and O & M planning from 1986 through 1996.

2. The State's share of the remedial action cost is 10 percent or $129,000, of which $89,650 has already been paid (in May 1991, per Amendment #4). The State shall submit to EPA a lump sum payment of $39,350 for the outstanding costs. Payment is due on November 21, 1997. The State assures its cost-share obligation for actual remedial action costs at the Site, which shall be settled at reconciliation.

In witness whereof, the parties hereto have executed this Contract in two (2) copies, each of which shall be deemed an original.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

M Gearheard Date 10/16/97

Michael F. Gearheard, Associate Director
Environmental Cleanup Office

STATE OF WASHINGTON

Mary E. Burg Date 10.21.97

Mary Burg, Program Manager
Toxics Cleanup Program